YAMAHA

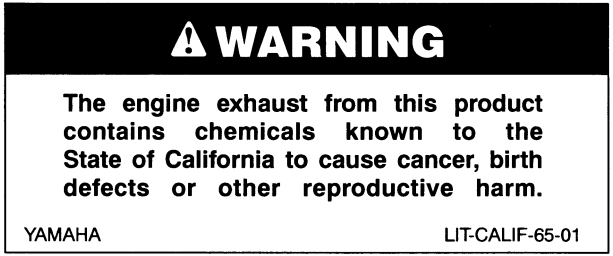
OWNER'S MANUAL

XVS650R(C)
XVS650AR(C)

LIT-11626-16-05

5FB-28199-12

EAU03438


WARNING
The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.
YAMAHA
LIT-CALIF-65-01

INTRODUCTION

Congratulations on your purchase of the Yamaha XVS650(C)/XVS650A(C). This model is the result of Yamaha's vast experience in the production of fine sporting, touring, and pacesetting racing machines. It represents the high degree of craftsmanship and reliability that have made Yamaha a leader in these fields.

This manual will give you an understanding of the operation, inspection, and basic maintenance of this motorcycle. If you have any questions concerning the operation or maintenance of your motorcycle, please consult a Yamaha dealer.

The design and manufacture of this Yamaha motorcycle fully comply with the emissions standards for clean air applicable at the date of manufacture. Yamaha has met these standards without reducing the performance or economy of operation of the motorcycle. To maintain these high standards, it is important that you and your Yamaha dealer pay close attention to the recommended maintenance schedules and operating instructions contained within this manual.

IMPORTANT MANUAL INFORMATION

EAU00003

Particularly important information is distinguished in this manual by the following notations:

⚠	**The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**
⚠ WARNING	**Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander or a person inspecting or repairing the motorcycle.**
CAUTION:	**A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.**
NOTE:	A NOTE provides key information to make procedures easier or clearer.

NOTE:

- This manual should be considered a permanent part of this motorcycle and should remain with it even if the motorcycle is subsequently sold.
- Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your motorcycle and this manual. If you have any questions concerning this manual, please consult your Yamaha dealer.

EW000000

⚠ WARNING

PLEASE READ THIS MANUAL AND THE "YOU AND YOUR MOTORCYCLE: RIDING TIPS" BOOKLET CAREFULLY AND COMPLETELY BEFORE OPERATING THIS MOTORCYCLE. DO NOT ATTEMPT TO OPERATE THIS MOTORCYCLE UNTIL YOU HAVE ATTAINED ADEQUATE KNOWLEDGE OF ITS CONTROLS AND OPERATING FEATURES AND UNTIL YOU HAVE BEEN TRAINED IN SAFE AND PROPER RIDING TECHNIQUES. REGULAR INSPECTIONS AND CAREFUL MAINTENANCE, ALONG WITH GOOD RIDING SKILLS, WILL ENSURE THAT YOU SAFELY ENJOY THE CAPABILITIES AND THE RELIABILITY OF THIS MOTORCYCLE.

IMPORTANT MANUAL INFORMATION

AFFIX DEALER

LABEL HERE

EAU04247

XVS650R(C)/XVS650AR(C)
OWNER'S MANUAL
©2002 by Yamaha Motor Corporation, U.S.A.
1st edition, February 2002
All rights reserved.
Any reprinting or unauthorized use
without the written permission of
Yamaha Motor Corporation, U.S.A.
is expressly prohibited.
Printed in Japan.
P/N LIT-11626-16-05

EAU00009

TABLE OF CONTENTS

1 SAFETY INFORMATION 1

2 DESCRIPTION 2

3 INSTRUMENT AND CONTROL FUNCTIONS 3

4 PRE-OPERATION CHECKS 4

5 OPERATION AND IMPORTANT RIDING POINTS 5

6 PERIODIC MAINTENANCE AND MINOR REPAIR 6

7 MOTORCYCLE CARE AND STORAGE 7

8 SPECIFICATIONS 8

9 CONSUMER INFORMATION 9

INDEX

Safe riding 1-1
Protective apparel 1-3
Modifications 1-3
Loading and accessories 1-3
Gasoline and exhaust gas 1-5
Location of important labels 1-7

⚠ SAFETY INFORMATION

EAU03633

MOTORCYCLES ARE SINGLE TRACK VEHICLES. THEIR SAFE USE AND OPERATION ARE DEPENDENT UPON THE USE OF PROPER RIDING TECHNIQUES AS WELL AS THE EXPERTISE OF THE OPERATOR. EVERY OPERATOR SHOULD KNOW THE FOLLOWING REQUIREMENTS BEFORE RIDING THIS MOTORCYCLE.

HE OR SHE SHOULD:

1. OBTAIN THOROUGH INSTRUCTIONS FROM A COMPETENT SOURCE ON ALL ASPECTS OF MOTORCYCLE OPERATION.
2. OBSERVE THE WARNINGS AND MAINTENANCE REQUIREMENTS IN THE OWNER'S MANUAL.
3. OBTAIN QUALIFIED TRAINING IN SAFE AND PROPER RIDING TECHNIQUES.
4. OBTAIN PROFESSIONAL TECHNICAL SERVICE AS INDICATED BY THE OWNER'S MANUAL AND/OR WHEN MADE NECESSARY BY MECHANICAL CONDITIONS.

Safe riding

1. Always make pre-operation checks. Careful checks may help prevent an accident.
2. This motorcycle is designed to carry the operator and a passenger.
3. The failure of motorists to detect and recognize motorcycles in traffic is the predominating cause of automobile/motorcycle accidents. Many accidents have been caused by an automobile driver who did not see the motorcycle. Making yourself conspicuous appears to be very effective in reducing the chance of this type of accident.

Therefore:

a. Wear a brightly colored jacket.
b. Use extra caution when approaching and passing through intersections, since intersections are the most likely places for motorcycle accidents to occur.
c. Ride where other motorists can see you. Avoid riding in another motorist's blind spot.

4. Many motorcycle accidents involve inexperienced operators. In fact, many operators who have been involved in accidents do not even have a current motorcycle license.
   a. Make sure that you are qualified and that you only lend your motorcycle to other qualified operators.
   b. Know your skills and limits. Staying within your limits may help you to avoid an accident.
   c. We recommend that you practice riding your motorcycle where there is no traffic until you have become thoroughly familiar with the motorcycle and all of its controls.
5. Many motorcycle accidents have been caused by error of the motorcycle operator. A typical error made by the operator is veering wide on a turn due to EXCESSIVE SPEED or undercornering (insufficient lean angle for the speed).
   a. Always obey the speed limit and never travel faster than warranted by road and traffic conditions.
   b. Always signal before turning or changing lanes. Make sure that other motorists can see you.
6. The posture of the operator and passenger is important for proper control.
   a. The operator should keep both hands on the handlebar and both feet on the operator footrests during operation to maintain control of the motorcycle.
   b. The passenger should always hold onto the operator, seat strap, or grab bar, if equipped, with both hands and keep both feet on the passenger footrests.
   c. Never carry a passenger unless he or she can firmly place both feet on the passenger footrests.
7. Never ride under the influence of alcohol or other drugs.
8. This motorcycle is designed for on-road use only, therefore, it is not suitable for off-road use.

Protective apparel

The majority of fatalities from motorcycle accidents are the result of head injuries. The use of a safety helmet is the single most critical factor in the prevention or reduction of head injuries.

1. Always wear an approved helmet.
2. Wear a face shield or goggles. Wind in your unprotected eyes could contribute to an impairment of vision which could delay seeing a hazard.
3. The use of a jacket, heavy boots, trousers, gloves, etc., is effective in preventing or reducing abrasions or lacerations.
4. Never wear loose-fitting clothes, otherwise they could catch on the control levers, footrests, or wheels and cause injury or an accident.
5. Never touch the engine or exhaust system during or after operation. They become very hot and can cause burns. Always wear protective clothing that covers your legs, ankles, and feet.
6. Passengers should also observe the precautions mentioned above.

Modifications

Modifications made to this motorcycle not approved by Yamaha, or the removal of original equipment, may render the motorcycle unsafe for use and may cause severe personal injury. Modifications may also make your motorcycle illegal to use.

Loading and accessories

Adding accessories or cargo to your motorcycle can adversely affect stability and handling if the weight distribution of the motorcycle is changed. To avoid the possibility of an accident, use extreme caution when adding cargo or accessories to your motorcycle. Use extra care when riding a motorcycle that has added cargo or accessories. Here are some general guidelines to follow if loading cargo or adding accessories to your motorcycle:

Loading

The total weight of the operator, passenger, accessories and cargo must not exceed the maximum load limit of XVS650(C): 397 lb (180 kg)/XVS650A(C): 441 lb (200 kg). When loading within this weight limit, keep the following in mind:

1. Cargo and accessory weight should be kept as low and close to the motorcycle as possible. Make sure to distribute the weight as evenly as possible on both sides of the motorcycle to minimize imbalance or instability.
2. Shifting weights can create a sudden imbalance. Make sure that accessories and cargo are securely attached to the motorcycle before riding. Check accessory mounts and cargo restraints frequently.
3. Never attach any large or heavy items to the handlebar, front fork, or front fender. These items, including such cargo as sleeping bags, duffel bags, or tents, can create unstable handling or slow steering response.

Accessories

Genuine Yamaha accessories have been specifically designed for use on this motorcycle. Since Yamaha cannot test all other accessories that may be available, you must personally be responsible for the proper selection, installation and use of non-Yamaha accessories. Use extreme caution when selecting and installing any accessories.

Keep the following guidelines in mind, as well as those provided under “Loading” when mounting accessories.

1. Never install accessories or carry cargo that would impair the performance of your motorcycle. Carefully inspect the accessory before using it to make sure that it does not in any way reduce ground clearance or cornering clearance, limit suspension travel, steering travel or control operation, or obscure lights or reflectors.

a. Accessories fitted to the handlebar or the front fork area can create instability due to improper weight distribution or aerodynamic changes. If accessories are added to the handlebar or front fork area, they must be as lightweight as possible and should be kept to a minimum.
b. Bulky or large accessories may seriously affect the stability of the motorcycle due to aerodynamic effects. Wind may attempt to lift the motorcycle, or the motorcycle may become unstable in cross winds. These accessories may also cause instability when passing or being passed by large vehicles.
c. Certain accessories can displace the operator from his or her normal riding position. This improper position limits the freedom of movement of the operator and may limit control ability, therefore, such accessories are not recommended.

2. Use caution when adding electrical accessories. If electrical accessories exceed the capacity of the motorcycle's electrical system, an electric failure could result, which could cause a dangerous loss of lights or engine power.

Gasoline and exhaust gas

1. GASOLINE IS HIGHLY FLAMMABLE:

a. Always turn the engine off when refueling.
b. Take care not to spill any gasoline on the engine or exhaust system when refueling.
c. Never refuel while smoking or in the vicinity of an open flame.

2. Never start the engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and may cause loss of consciousness and death within a short time. Always operate your motorcycle in an area that has adequate ventilation.
3. Always turn the engine off before leaving the motorcycle unattended and remove the key from the main switch. When parking the motorcycle, note the following:

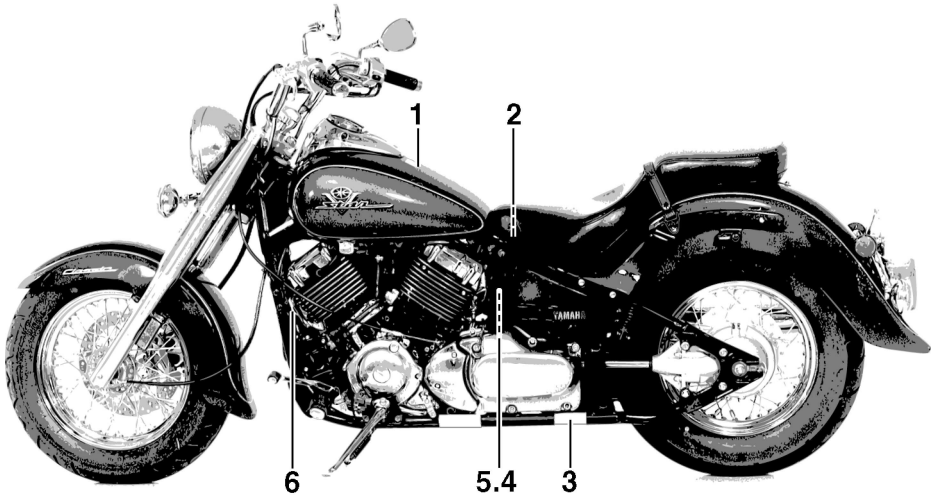
a. The engine and exhaust system may be hot, therefore, park the motorcycle in a place where pedestrians or children are not likely to touch these hot areas.
b. Do not park the motorcycle on a slope or soft ground, otherwise it may fall over.
c. Do not park the motorcycle near a flammable source (e.g. a kerosene heater, or near an open flame), otherwise it could catch fire.

4. When transporting the motorcycle in another vehicle, make sure that it is kept upright and that the fuel cock is turned to “ON” or “RES” (for vacuum type) / “OFF” (for manual type). If it should lean over, gasoline may leak out of the carburetor or fuel tank.
5. If you should swallow any gasoline, inhale a lot of gasoline vapor, or allow gasoline to get into your eyes, see your doctor immediately. If any gasoline spills on your skin or clothing, immediately wash the affected area with soap and water and change your clothes.

EAU02977

Location of important labels

Please read the following important labels carefully before operating this motorcycle.



1

⚠ WARNING

- **BEFORE YOU OPERATE THIS VEHICLE, READ THE OWNER'S MANUAL AND ALL LABELS.**
- **ALWAYS WEAR AN APPROVED MOTORCYCLE HELMET,** eye protection, and protective clothing.

5GK-2118K-00

2

⚠ WARNING

This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
- Read owner's manual for instructions.
- Do not incinerate, puncture or open.

4AA-22259-80

3 XVS650

TIRE INFORMATION

Cold tire normal pressure should be set as follows.

- Up to 90 kg (198 lbs) load

FRONT : 200 kPa, {2.00 kgf/cm^2}, 29 psi
REAR : 225 kPa, {2.25 kgf/cm^2}, 33 psi

- 90 kg (198 lbs) ~ maximum load

FRONT : 200 kPa, {2.00 kgf/cm^2}, 29 psi
REAR : 250 kPa, {2.50 kgf/cm^2}, 36 psi

5FB-21668-00

3 XVS650A

TIRE INFORMATION

Cold tire normal pressure should be set as follows.

- Up to 90 kg (198 lbs) load

FRONT : 225 kPa, {2.25 kgf/cm^2}, 33 psi
REAR : 225 kPa, {2.25 kgf/cm^2}, 33 psi

- 90 kg (198 lbs) ~ maximum load

FRONT : 225 kPa, {2.25 kgf/cm^2}, 33 psi
REAR : 250 kPa, {2.50 kgf/cm^2}, 36 psi

5BN-21668-00

4

LOAD LIMIT

1 Kg {2 lbs}

4BR-24877-A0

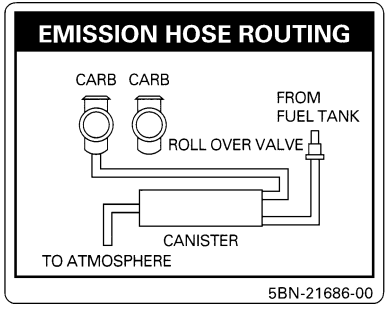
5

⚠ WARNING

Improper loading can cause loss of control.
Read owner's manual for proper loading.

3JJ-28446-A0

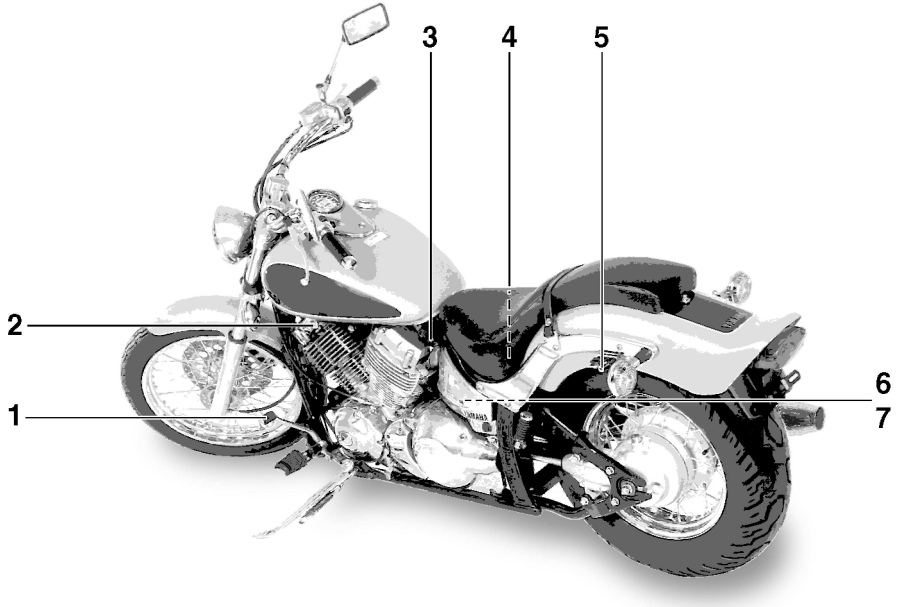
6 California only



Left view (XVS650) 2-1
Right view (XVS650) 2-2
Left view (XVS650A) 2-3
Right view (XVS650A) 2-4
Controls and instruments (XVS650/XVS650A) 2-5

DESCRIPTION

Left view (XVS650)

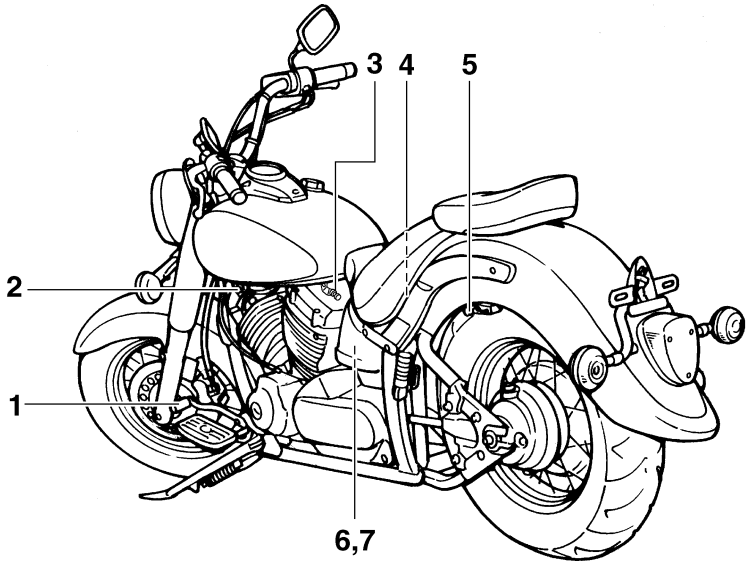


1. Shift pedal (page 3-4)
2. Fuel cock (page 3-8)
3. Starter (choke) knob (page 3-9)
4. Shock absorber assembly spring preload adjusting ring (page 3-14)
5. Helmet holder (page 3-12)
6. Storage compartment (page 3-13)
7. Owner's tool kit (page 6-1)

Right view (XVS650)

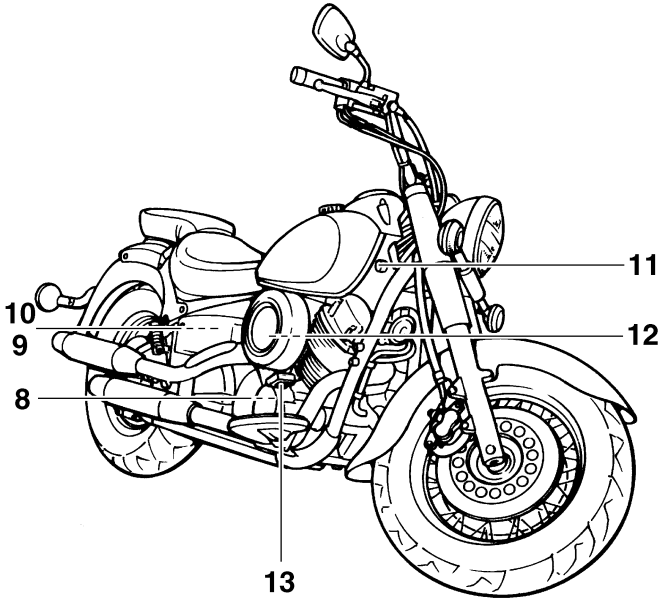
8. Engine oil filter element	(page 6-11)	11. Main switch/steering lock	(page 3-1)
9. Battery	(page 6-31)	12. Air filter element	(page 6-15)
10. Fuses	(page 6-33)	13. Brake pedal	(page 3-5)

Left view (XVS650A)



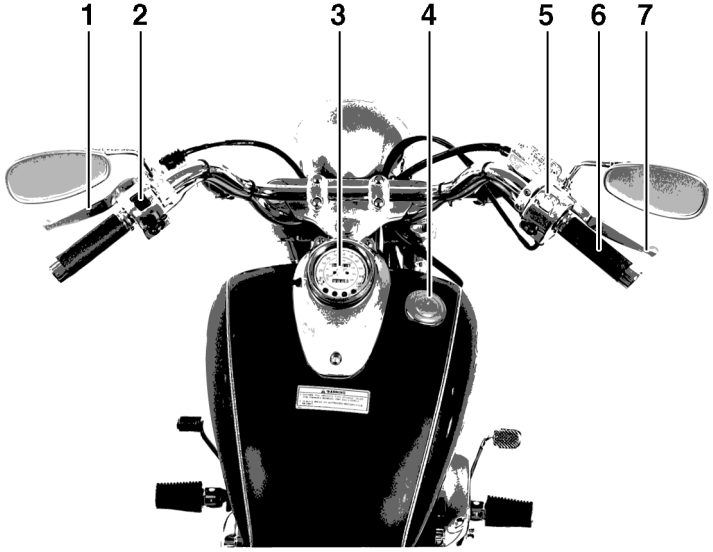
1. Shift pedal (page 3-4)
2. Fuel cock (page 3-8)
3. Starter (choke) knob (page 3-9)
4. Shock absorber assembly spring preload adjusting ring (page 3-14)
5. Helmet holder (page 3-12)
6. Storage compartment (page 3-13)
7. Owner's tool kit (page 6-1)

Right view (XVS650A)



8. Engine oil filter element	(page 6-11)	11. Main switch/steering lock	(page 3-1)
9. Battery	(page 6-31)	12. Air filter element	(page 6-15)
10. Fuses	(page 6-33)	13. Brake pedal	(page 3-5)

Controls and instruments (XVS650/XVS650A)

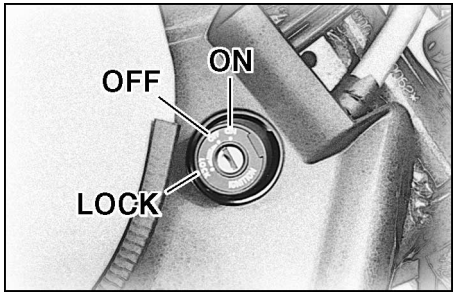


1. Clutch lever (page 3-4)
2. Left handlebar switches (page 3-3)
3. Speedometer unit (page 3-2)
4. Fuel tank cap (page 3-6)
5. Right handlebar switches (page 3-3)
6. Throttle grip (page 6-17)
7. Brake lever (page 3-5)

INSTRUMENT AND CONTROL FUNCTIONS

Main switch/steering lock 3-1
Indicator and warning lights 3-2
Speedometer unit 3-2
Handlebar switches 3-3
Clutch lever 3-4
Shift pedal (XVS650) 3-4
Shift pedal (XVS650A) 3-4
Brake lever 3-5
Brake pedal 3-5
Fuel tank cap 3-6
Fuel 3-7
Fuel cock 3-8
Starter (choke) knob 3-9
Seats (XVS650) 3-9
Seats (XVS650A) 3-11
Helmet holder 3-12
Storage compartment 3-13
Adjusting the shock absorber assembly 3-14
Luggage strap holders 3-15
Sidestand 3-15
Ignition circuit cut-off system 3-16

EAU00027



EAU00029

Main switch/steering lock

The main switch/steering lock controls the ignition and lighting systems, and is used to lock the steering. The various positions are described below.

EAU00032

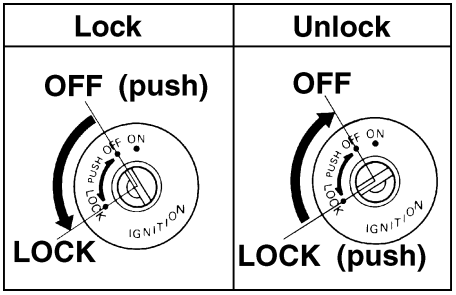
ON

All electrical systems are supplied with power, the headlight, meter lighting, taillight and front position lights come on, and the engine can be started. The key cannot be removed.

EAU00038

OFF

All electrical systems are off. The key can be removed.



EAU00040

LOCK

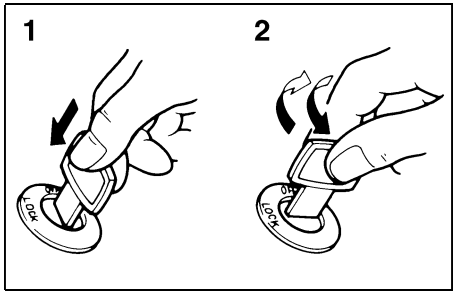
The steering is locked, and all electrical systems are off. The key can be removed.

To lock the steering

1. Turn the handlebars all the way to the left.
2. Push the key in from the “OFF” position, and then turn it to “LOCK” while still pushing it.
3. Remove the key.

To unlock the steering

Push the key in, and then turn it to “OFF” while still pushing it.

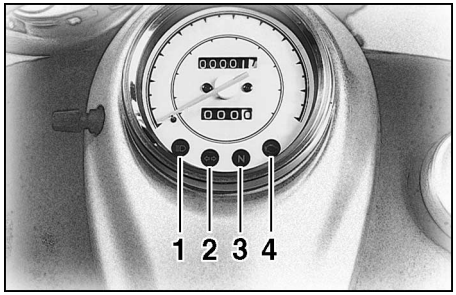


1. Push.
2. Turn.

EW000016

⚠ WARNING

Never turn the key to “OFF” or “LOCK” while the motorcycle is moving, otherwise the electrical systems will be switched off, which may result in loss of control or an accident. Make sure that the motorcycle is stopped before turning the key to “OFF” or “LOCK”.



1. High beam indicator light "≣O"
2. Turn signal indicator light "⇦ ⇨"
3. Neutral indicator light "N"
4. Engine trouble warning light "🔧"

EAU03034

Indicator and warning lights

EAU00063

High beam indicator light "≣O"

This indicator light comes on when the high beam of the headlight is switched on.

EAU00057

Turn signal indicator light "⇦ ⇨"

This indicator light flashes when the turn signal switch is pushed to the left or right.

EAU00061

Neutral indicator light "N"

This indicator light comes on when the transmission is in the neutral position.

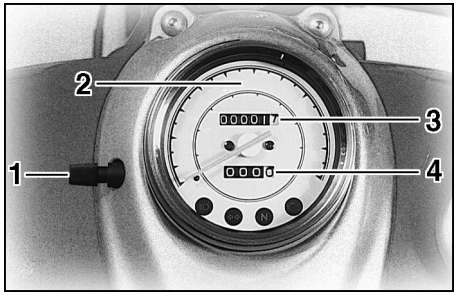
EAU04243*

Engine trouble warning light "🔧"

This warning light comes on when an electrical circuit monitoring the engine is defective. When this occurs, have a Yamaha dealer check the self-diagnosis system.

NOTE:

This warning light comes on for a few seconds, then goes off when the key is turned to "ON", but this does not indicate a malfunction.

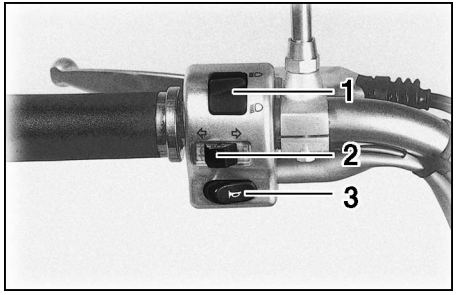


1. Tripmeter reset knob
2. Speedometer
3. Odometer
4. Tripmeter

EAU00095

Speedometer unit

The speedometer unit is equipped with a speedometer, an odometer and a tripmeter. The speedometer shows riding speed. The odometer shows the total distance traveled. The tripmeter shows the distance traveled since it was last set to zero with the reset knob. The tripmeter can be used to estimate the distance that can be traveled with a full tank of fuel. This information will enable you to plan future fuel stops.



1. Dimmer switch "≡O / ≡O"
2. Turn signal switch " ⇦ / ⇨ "
3. Horn switch " "

EAU00118

Handlebar switches

EAU03888

Dimmer switch "≡O / ≡O "

Set this switch to "≡O" for the high beam and to "≡O " for the low beam.

EAU04218

Turn signal switch " ⇦ / ⇨ "

To signal a right-hand turn, push this switch to "⇨". To signal a left-hand turn, push this switch to "⇦". When released, the switch returns to the center position.

Since this model is equipped with a self-canceling system, the turn signal lights will self-cancel after the motorcycle has traveled both about 150 m (490 ft) and for approximately 15 seconds. However, the turn signal lights can also be canceled manually by pushing the switch in after it has returned to the center position.

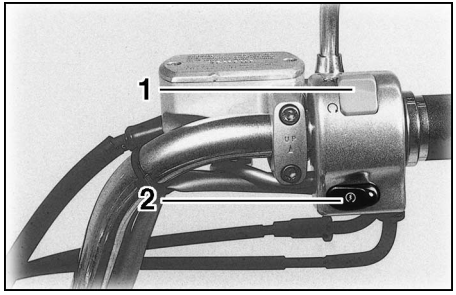
NOTE:

The self-canceling system only operates when the motorcycle is moving, so that the turn signal lights will not self-cancel while you are stopped at an intersection.

EAU00129

Horn switch " "

Press this switch to sound the horn.



1. Engine stop switch " / "
2. Start switch " "

EAU03890

Engine stop switch " / "

Set this switch to " " before starting the engine. Set this switch to " " to stop the engine in case of an emergency, such as when the motorcycle overturns or when the throttle cable is stuck.

EAU00143

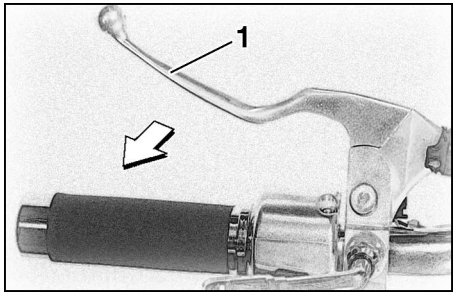
Start switch " "

Push this switch to crank the engine with the starter.

EC000005

CAUTION:

See page 5-1 for starting instructions prior to starting the engine.



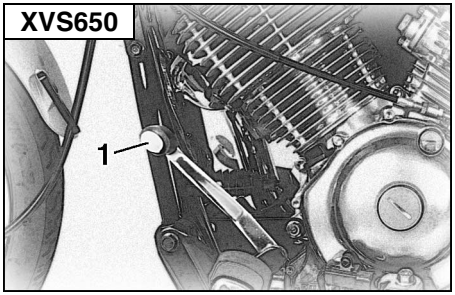
1. Clutch lever

EAU00152

Clutch lever

The clutch lever is located at the left handlebar grip. To disengage the clutch, pull the lever toward the handlebar grip. To engage the clutch, release the lever. The lever should be pulled rapidly and released slowly for smooth clutch operation.

The clutch lever is equipped with a clutch switch, which is part of the ignition circuit cut-off system. (See page 3-16 for an explanation of the ignition circuit cut-off system.)

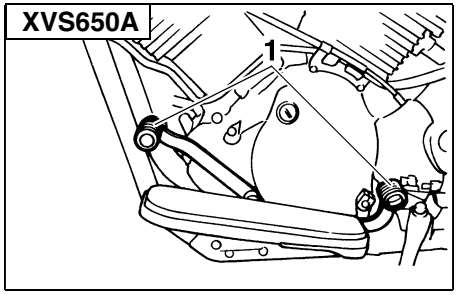


1. Shift pedal

EAU00157

Shift pedal (XVS650)

The shift pedal is located on the left side of the engine and is used in combination with the clutch lever when shifting the gears of the 5-speed constant-mesh transmission equipped on this motorcycle.



1. Shift pedal

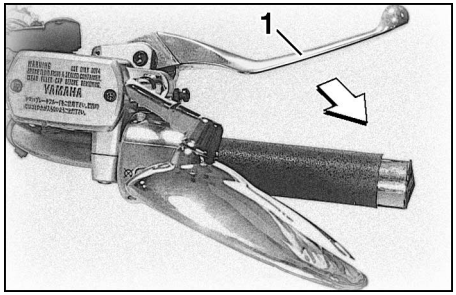
EAU01215

Shift pedal (XVS650A)

The shift pedal is located on the left side of the engine and is used in combination with the clutch lever when shifting the gears of the 5-speed constant-mesh transmission equipped on this motorcycle.

NOTE:

Use your toes or heel to shift up and your toes to shift down.

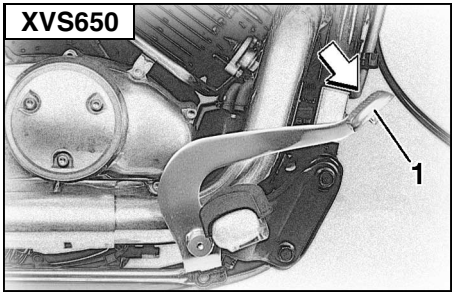


1. Brake lever

EAU00158

Brake lever

The brake lever is located at the right handlebar grip. To apply the front brake, pull the lever toward the handlebar grip.

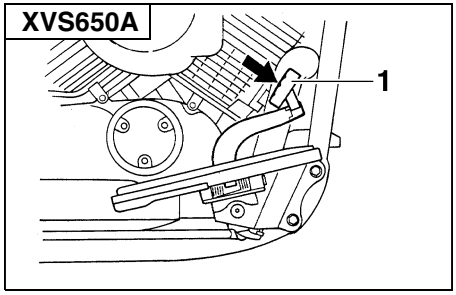


1. Brake pedal

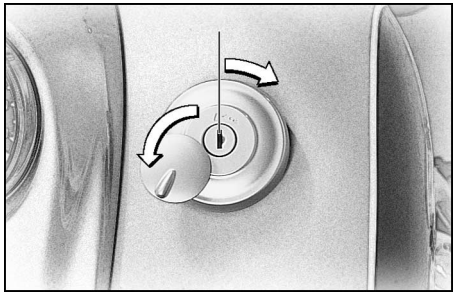
EAU00162

Brake pedal

The brake pedal is on the right side of the motorcycle. To apply the rear brake, press down on the brake pedal.



1. Brake pedal



EAU03447

Fuel tank cap

To remove the fuel tank cap

Slide the lock cover open, insert the key into the lock, and then turn it 1/4 turn clockwise. The lock will be released and the fuel tank cap can be removed.

To install the fuel tank cap

1. Insert the fuel tank cap into the tank opening with the key inserted in the lock and with the marks on the cap and tank aligned.
2. Turn the key counterclockwise to the original position, remove it, and then close the lock cover.

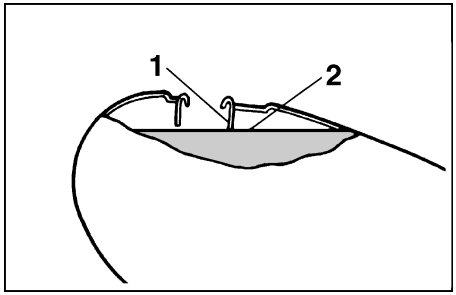
NOTE:

The fuel tank cap cannot be installed unless the key is in the lock. In addition, the key cannot be removed if the cap is not properly installed and locked.

EW000024

⚠ WARNING

Make sure that the fuel tank cap is properly installed before riding.



1. Fuel tank filler tube
2. Fuel level

EAU03753

Fuel

Make sure that there is sufficient fuel in the tank. Fill the fuel tank to the bottom of the filler tube as shown.

EW000130

⚠ WARNING

- **Do not overfill the fuel tank, otherwise it may overflow when the fuel warms up and expands.**
- **Avoid spilling fuel on the hot engine.**

EAU00185

CAUTION:

Immediately wipe off spilled fuel with a clean, dry, soft cloth, since fuel may deteriorate painted surfaces or plastic parts.

EAU04265

Recommended fuel:
UNLEADED GASOLINE ONLY
Fuel tank capacity:
Total amount:
16 L (3.5 Imp gal, 4.2 US gal)
Reserve amount:
3 L (0.7 Imp gal, 0.8 US gal)

ECA00104

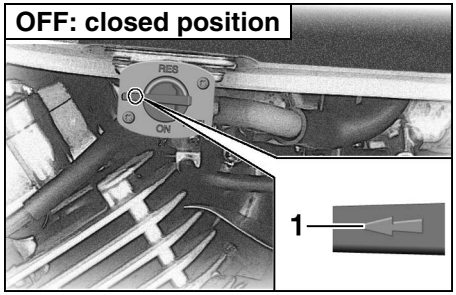
CAUTION:

Use only unleaded gasoline. The use of leaded gasoline will cause severe damage to internal engine parts, such as the valves and piston rings, as well as to the exhaust system.

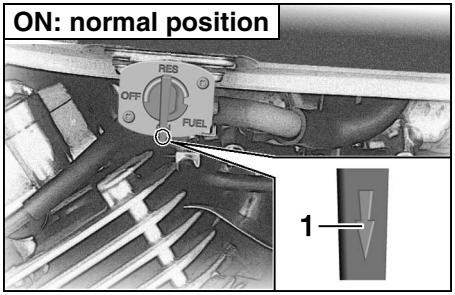
Your Yamaha engine has been designed to use regular unleaded gasoline with a pump octane number [(R+M)/2] of 86 or higher, or a research octane number of 91 or higher. If knocking (or pinging) occurs, use a gasoline of a different brand or premium unleaded fuel. Use of unleaded fuel will extend spark plug life and reduce maintenance costs.

Gasohol

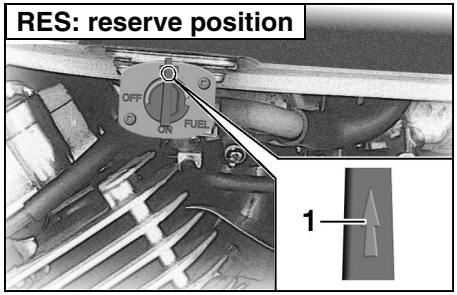
There are two types of gasohol: gasohol containing ethanol and that containing methanol. Gasohol containing ethanol can be used if the ethanol content does not exceed 10%. Gasohol containing methanol is not recommended by Yamaha because it can cause damage to the fuel system or vehicle performance problems.



1. Arrow mark positioned over “OFF”



1. Arrow mark positioned over “ON”



1. Arrow mark positioned over “RES”

EAU02969

Fuel cock

The fuel cock supplies fuel from the tank to the carburetors while also filtering it.

The fuel cock lever positions are explained as follows and shown in the illustrations.

OFF

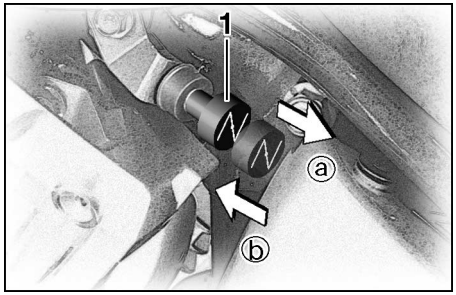
With the fuel cock lever in this position, fuel will not flow. Always turn the fuel cock lever to this position when the engine is not running.

ON

With the fuel cock lever in this position, fuel flows to the carburetors. Turn the fuel cock lever to this position when starting the engine and riding.

RES

This indicates reserve. With the fuel cock lever in this position, the fuel reserve is made available. Turn the fuel cock lever to this position if you run out of fuel while riding. When this occurs, refuel as soon as possible and be sure to turn the fuel cock lever back to “ON”!



1. Starter (choke) knob "⎸◝⎸"

EAU03031

Starter (choke) knob "⎸◝⎸"

Starting a cold engine requires a richer air-fuel mixture, which is supplied by the starter (choke).

Move the knob in direction ⓐ to turn on the starter (choke).

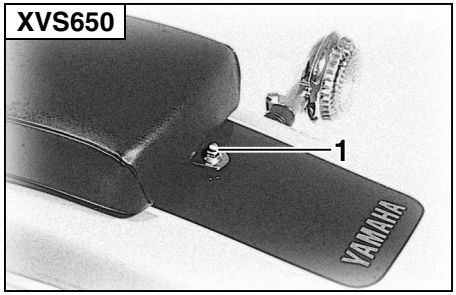
Move the knob in direction ⓑ to turn off the starter (choke).

ECA00038

CAUTION:

Do not use the starter (choke) for more than 3 minutes as the exhaust pipe may discolor from excessive heat. In addition, extended use of the starter (choke) will cause afterburning. If this occurs, turn off the starter (choke).

XVS650



1. Nut

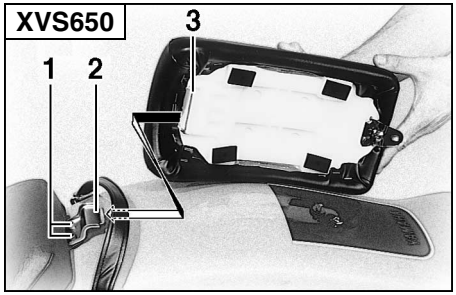
EAU01889

Seats (XVS650)

Passenger seat

To remove the passenger seat

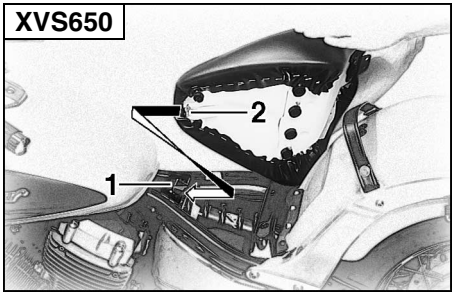
Remove the nut, and then pull the passenger seat up.



1. Bolt (× 2)
2. Seat holder
3. Projection

To install the passenger seat

Insert the projection on the front of the passenger seat into the seat holder as shown, place the seat in the original position, and then install the nut.



1. Seat holder
2. Projection

Rider seat

To remove the rider seat

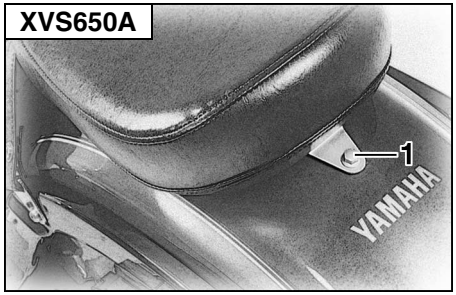
1. Remove the passenger seat.
2. Remove the bolts, and then pull the seat up.

To install the rider seat

1. Insert the projection on the front of the rider seat into the seat holder as shown, place the seat in the original position, and then install the bolts.
2. Install the passenger seat.

NOTE:

Make sure that the seats are properly secured before riding.



1. Bolt

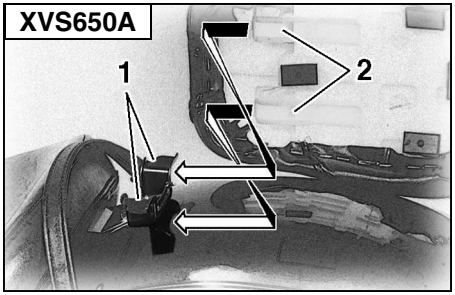
EAU04188

Seats (XVS650A)

Passenger seat

To remove the passenger seat

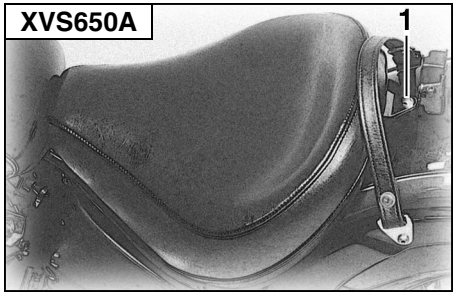
Remove the bolt, and then pull the passenger seat up.



1. Seat holder (× 2)
2. Projection (× 2)

To install the passenger seat

Insert the projections on the front of the passenger seat into the holders as shown, place the seat in the original position, and then install the bolt.

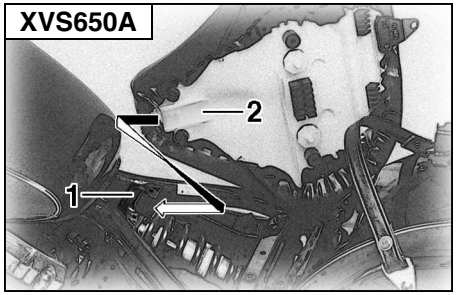


1. Bolt

Rider seat

To remove the rider seat

1. Remove the passenger seat.
2. Remove the bolt, and then pull the rider seat up.



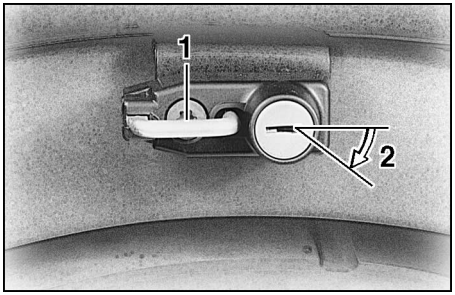
1. Seat holder
2. Projection

To install the rider seat

1. Insert the projection on the front of the rider seat into the holder as shown, place the seat in the original position, and then install the bolt.
2. Install the passenger seat.

NOTE:

Make sure that the seats are properly secured before riding.



1. Helmet holder
2. Unlock.

EAU00260

Helmet holder

To open the helmet holder, insert the key into the lock, and then turn the key as shown.

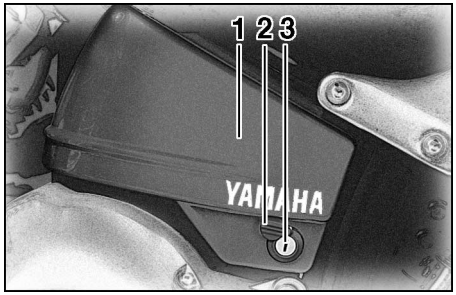
To lock the helmet holder, place it in the original position, and then remove the key.

EW000030

⚠ WARNING

Never ride with a helmet attached to the helmet holder, since the helmet may hit objects, causing loss of control and possibly an accident.

3



1. Storage compartment cover
2. Storage compartment lock cover
3. Storage compartment lock

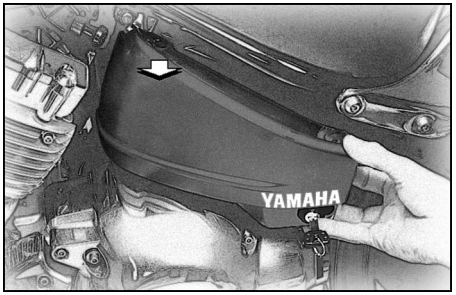
EAU01869

Storage compartment

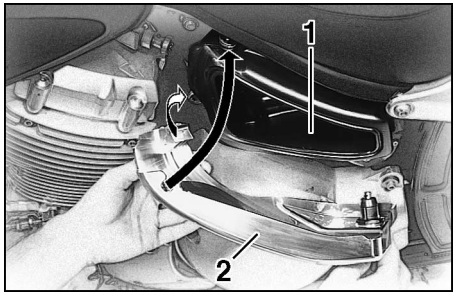
The storage compartment is located on the left side of the motorcycle.

To open the storage compartment

1. Slide the lock cover open, insert the key into the lock, and then turn it clockwise.



2. Pull the storage compartment cover out as shown.



1. Storage compartment
2. Storage compartment cover

To close the storage compartment

1. Place the storage compartment cover in its original position as shown.
2. Turn the key counterclockwise, remove it, and then close the lock cover.

EAU00299

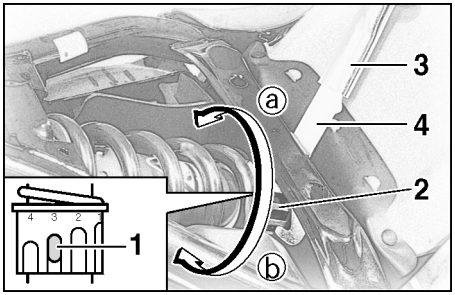
Adjusting the shock absorber assembly

This shock absorber assembly is equipped with a spring preload adjusting ring.

EC000015

CAUTION:

Never attempt to turn an adjusting mechanism beyond the maximum or minimum settings.



1. Position indicator
2. Spring preload adjusting ring
3. Extension bar
4. Special wrench

Adjust the spring preload as follows.

1. Remove the passenger and rider seats. (See page 3-9 [XVS650] or 3-11 [XVS650A] for removal and installation procedures.)
2. To increase the spring preload and thereby harden the suspension, turn the adjusting ring in direction ⓐ. To decrease the spring preload and thereby soften the suspension, turn the adjusting ring in direction ⓑ.

NOTE:

- Align the appropriate notch in the adjusting ring with the position indicator on the shock absorber.
- Use the special wrench and extension bar included in the owner's tool kit to make the adjustment.

	Setting
Minimum (soft)	1
Standard	3
Maximum (hard)	7

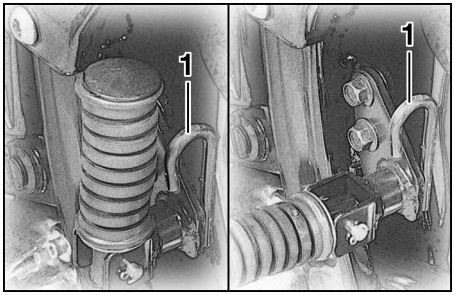
3. Install the passenger and rider seats.

EAU00315

⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas. For proper handling, read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

- **Do not tamper with or attempt to open the gas cylinder.**
- **Do not subject the shock absorber to an open flame or other high heat sources, otherwise it may explode due to excessive gas pressure.**
- **Do not deform or damage the gas cylinder in any way, as this will result in poor damping performance.**
- **Always have a Yamaha dealer service the shock absorber.**



1. Luggage strap holder (× 2)

EAU01172

Luggage strap holders

There is a luggage strap holder on each passenger footrest.

EAU00330

Sidestand

The sidestand is located on the left side of the frame. Raise the sidestand or lower it with your foot while holding the motorcycle upright.

NOTE:

The built-in sidestand switch is part of the ignition circuit cut-off system, which cuts the ignition in certain situations. (See further down for an explanation of the ignition circuit cut-off system.)

EW000044

⚠ WARNING

The motorcycle must not be ridden with the sidestand down, or if the sidestand cannot be properly moved up (or does not stay up), otherwise the sidestand could contact the ground and distract the operator, resulting in a possible loss of control. Yamaha's ignition circuit cut-off system has been designed to assist the operator in fulfilling the responsibility of raising the sidestand before starting off. Therefore, check this system regularly as described below and have a Yamaha dealer repair it if it does not function properly.

EAU03720

Ignition circuit cut-off system

The ignition circuit cut-off system (comprising the sidestand switch, clutch switch and neutral switch) has the following functions.

- It prevents starting when the transmission is in gear and the sidestand is up, but the clutch lever is not pulled.
- It prevents starting when the transmission is in gear and the clutch lever is pulled, but the sidestand is still down.
- It cuts the running engine when the transmission is in gear and the sidestand is moved down.

Periodically check the operation of the ignition circuit cut-off system according to the following procedure.

EW000045

⚠ WARNING

If a malfunction is noted, have a Yamaha dealer check the system before riding.

With the engine turned off:
1. Move the sidestand down.
2. Make sure that the engine stop switch is set to "○".
3. Turn the key to "ON".
4. Shift the transmission into the neutral position.
5. Push the start switch.

Does the engine start?

YES **NO** → The neutral switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

With the engine still running:
6. Move the sidestand up.
7. Keep the clutch lever pulled.
8. Shift the transmission into gear.
9. Move the sidestand down.

Does the engine stall?

YES **NO** → The sidestand switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

After the engine has stalled:
10. Move the sidestand up.
11. Keep the clutch lever pulled.
12. Push the start switch.

Does the engine start?

YES **NO** → The clutch switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

The system is OK. **The motorcycle can be ridden.**

NOTE:
This check is most reliable if performed with a warmed-up engine.

PRE-OPERATION CHECKS

Pre-operation check list 4-1

PRE-OPERATION CHECKS

EAU01114

The condition of a vehicle is the owner's responsibility. Vital components can start to deteriorate quickly and unexpectedly, even if the vehicle remains unused (for example, as a result of exposure to the elements). Any damage, fluid leakage or loss of tire air pressure could have serious consequences. Therefore, it is very important, in addition to a thorough visual inspection, to check the following points before each ride.

EAU03439

Pre-operation check list

ITEM	CHECKS	PAGE
Fuel	• Check fuel level in fuel tank. • Refuel if necessary. • Check fuel line for leakage.	3-7
Engine oil	• Check oil level in engine. • If necessary, add recommended oil to specified level. • Check vehicle for oil leakage.	6-11
Final gear oil	• Check vehicle for oil leakage.	6-14
Front brake	• Check operation. • If soft or spongy, have Yamaha dealer bleed hydraulic system. • Check lever free play. • Adjust if necessary. • Check fluid level in reservoir. • If necessary, add recommended brake fluid to specified level. • Check hydraulic system for leakage.	6-22, 6-25–6-26
Rear brake	• Check operation. • Check pedal free play. • Adjust if necessary.	6-23–6-25
Clutch	• Check operation. • Lubricate cable if necessary. • Check lever free play. • Adjust if necessary.	6-21, 6-28
Throttle grip	• Make sure that operation is smooth. • Check cable free play. • If necessary, have Yamaha dealer adjust cable free play and lubricate cable and grip housing.	6-17, 6-27

ITEM	CHECKS	PAGE
Control cables	• Make sure that operation is smooth. • Lubricate if necessary.	6-27
Wheels and tires	• Check for damage. • Check tire condition and tread depth. • Check air pressure. • Correct if necessary.	6-17–6-19
Brake and shift pedals	• Make sure that operation is smooth. • Lubricate pedal pivoting points if necessary.	6-28
Brake and clutch levers	• Make sure that operation is smooth. • Lubricate lever pivoting points if necessary.	6-28
Sidestand	• Make sure that operation is smooth. • Lubricate pivot if necessary.	6-29
Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened. • Tighten if necessary.	—
Instruments, lights, signals and switches	• Check operation. • Correct if necessary.	—
Sidestand switch	• Check operation of ignition circuit cut-off system. • If system is defective, have Yamaha dealer check vehicle.	3-15

NOTE:

Pre-operation checks should be made each time the motorcycle is used. Such an inspection can be accomplished in a very short time; and the added safety it assures is more than worth the time involved.

EWA00033

⚠ WARNING

If any item in the Pre-operation check list is not working properly, have it inspected and repaired before operating the motorcycle.

OPERATION AND IMPORTANT RIDING POINTS

Starting and warming up a cold engine 5-1
Starting a warm engine 5-3
Shifting 5-3
Engine break-in 5-5
Parking 5-6

EAU00372

EAU00373

⚠ WARNING

- **Become thoroughly familiar with all operating controls and their functions before riding. Consult a Yamaha dealer regarding any control or function that you do not thoroughly understand.**
- **Never start the engine or operate it in a closed area for any length of time. Exhaust fumes are poisonous, and inhaling them can cause loss of consciousness and death within a short time. Always make sure that there is adequate ventilation.**
- **Before starting out, make sure that the sidestand is up. If the sidestand is not raised completely, it could contact the ground and distract the operator, resulting in a possible loss of control.**

EAU00376

CAUTION:

- **Make sure not to store personal items near the air cleaner intake, otherwise air intake will be blocked and performance will suffer.**
- **Make sure not to put anything near the battery and its terminals, otherwise electrical failure and acid corrosion may result.**

EAU04219*

Starting and warming up a cold engine

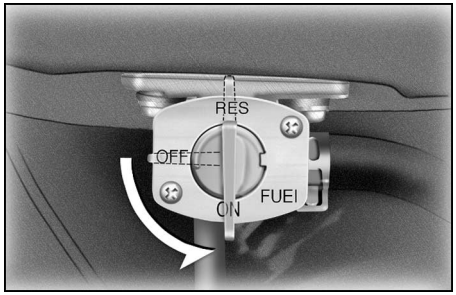
In order for the ignition circuit cut-off system to enable starting, one of the following conditions must be met:

- The transmission is in the neutral position.
- The transmission is in gear with the clutch lever pulled and the sidestand up.

EW000054

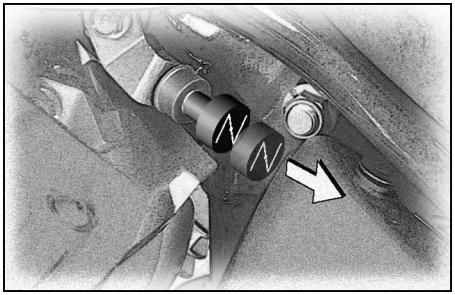
⚠ WARNING

- **Before starting the engine, check the function of the ignition circuit cut-off system according to the procedure described on page 3-17.**
- **Never ride with the sidestand down.**



1. Turn the fuel cock lever to “ON”.
2. Turn the key to “ON” and make sure that the engine stop switch is set to “ ”.
3. Shift the transmission into the neutral position.

NOTE:
When the transmission is in the neutral position, the neutral indicator light should be on, otherwise have a Yamaha dealer check the electrical circuit.



4. Turn the starter (choke) on and completely close the throttle. (See page 3-9 for starter (choke) operation.)
5. Start the engine by pushing the start switch.

NOTE:
If the engine fails to start, release the start switch, wait a few seconds, and then try again. Each starting attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.

ECA00101

CAUTION:
The engine trouble warning light should come on when the key is turned to “ON”, and then go off after a few seconds. If the engine trouble warning light comes on or flashes after starting, immediately stop the engine, and have a Yamaha dealer check the self-diagnosis system.

6. After starting the engine, move the starter (choke) knob back halfway.

ECA00055

CAUTION:
For maximum engine life, always warm the engine up before starting off. Never accelerate hard when the engine is cold!

7. When the engine is warm, turn the starter (choke) off.

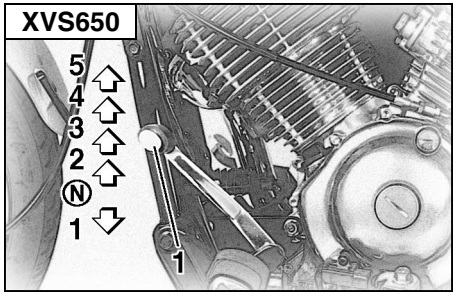
5

NOTE:
The engine is warm when it responds normally to the throttle with the starter (choke) turned off. To avoid the possibility of excessive exhaust emissions, never leave the starter (choke) on longer than necessary. The time necessary for starter (choke) use depends upon the ambient temperature. Temperatures above 10 °C (50 °F) require about 7 seconds of starter (choke) use and temperatures below 10 °C (50 °F) require about 35 seconds with the starter (choke) turned on, then about 2.5 minutes with the starter (choke) in the halfway position.

EAU01258

Starting a warm engine

Follow the same procedure as for starting a cold engine with the exception that the starter (choke) is not required when the engine is warm.



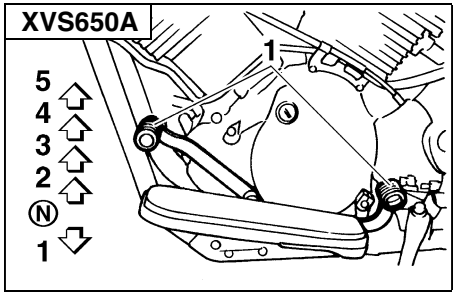
1. Shift pedal
N. Neutral position

EAU00423

Shifting

Shifting gears lets you control the amount of engine power available for starting off, accelerating, climbing hills, etc.
The gear positions are shown in the illustration.

NOTE:
To shift the transmission into the neutral position, press the shift pedal down repeatedly until it reaches the end of its travel, and then slightly raise it.



1. Shift pedal
N. Neutral position

EC000048

CAUTION:

- **Even with the transmission in the neutral position, do not coast for long periods of time with the engine off, and do not tow the motorcycle for long distances. The transmission is properly lubricated only when the engine is running. Inadequate lubrication may damage the transmission.**
- **Always use the clutch while changing gears to avoid damaging the engine, transmission, and drive train, which are not designed to withstand the shock of forced shifting.**

EAU02988

To start out and accelerate

1. Pull the clutch lever to disengage the clutch.
2. Shift the transmission into first gear. The neutral indicator light should go out.
3. Open the throttle gradually, and at the same time, release the clutch lever slowly.
4. At the recommended shift points shown in the table on page 5-5, close the throttle, and at the same time, quickly pull the clutch lever in.
5. Shift the transmission into second gear. (Make sure not to shift the transmission into the neutral position.)
6. Open the throttle part way and gradually release the clutch lever.
7. Follow the same procedure when shifting to the next higher gear.

NOTE:

Always shift gears at the recommended shift points.

5

EAU00427

To decelerate

1. Apply both the front and the rear brakes to slow the motorcycle.
2. Shift the transmission into first gear when the motorcycle reaches 25 km/h (15.5 mi/h). If the engine is about to stall or runs very roughly, pull the clutch lever in and use the brakes to stop the motorcycle.
3. Shift the transmission into the neutral position when the motorcycle is almost completely stopped. The neutral indicator light should come on.

EAU02974

Recommended shift points

The recommended shift points during acceleration and deceleration are shown in the table below.

	Acceleration shift point km/h (mi/h)	Deceleration shift point km/h (mi/h)
1st → 2nd	16 (9.9)	25 (15.5)
2nd → 3rd	24 (14.9)	25 (15.5)
3rd → 4th	32 (19.9)	25 (15.5)
4th → 5th	40 (24.9)	25 (15.5)

EAU01128

Engine break-in

There is never a more important period in the life of your engine than the period between 0 and 1,600 km (1,000 mi). For this reason, you should read the following material carefully.

Since the engine is brand new, do not put an excessive load on it for the first 1,600 km (1,000 mi). The various parts in the engine wear and polish themselves to the correct operating clearances. During this period, prolonged full-throttle operation or any condition that might result in engine overheating must be avoided.

EAU01171*

0–1,000 km (0–600 mi)
Avoid prolonged operation above 1/3 throttle.

1,000–1,600 km (600–1,000 mi)
Avoid prolonged operation above 1/2 throttle.

EC000056*

CAUTION:

After 1,000 km (600 mi) of operation, the engine oil and final gear oil must be changed, and the oil filter element replaced.

1,600 km (1,000 mi) and beyond
The vehicle can now be operated normally.

EC000049

CAUTION:

If any engine trouble should occur during the engine break-in period, immediately have a Yamaha dealer check the vehicle.

EAU00457

Parking

When parking, stop the engine, remove the key from the main switch, and then turn the fuel cock lever to "OFF".

EW000058

WARNING

- **Since the engine and exhaust system can become very hot, park in a place where pedestrians or children are not likely to touch them.**
- **Do not park on a slope or on soft ground, otherwise the motorcycle may overturn.**

5

Periodic maintenance 6-1
Owner's tool kit 6-1
Periodic maintenance chart for the emission control system 6-3
General maintenance and lubrication chart 6-4
Removing and installing panels 6-7
Checking the spark plugs 6-9
Canister (for California only) 6-11
Engine oil and oil filter element 6-11
Final gear oil 6-14
Cleaning the air filter element 6-15
Adjusting the carburetors 6-16
Adjusting the throttle cable free play 6-17
Adjusting the valve clearance 6-17
Tires 6-17
Spoke wheels 6-19
Accessories and replacement parts 6-20
Adjusting the clutch lever free play 6-21
Adjusting the brake lever free play 6-22
Adjusting the brake pedal position and free play 6-23
Adjusting the rear brake light switch 6-24
Checking the front brake pads and rear brake shoes 6-25
Checking the brake fluid level 6-26
Changing the brake fluid 6-27
Checking and lubricating the cables 6-27
Checking and lubricating the throttle grip and cable 6-27
Checking and lubricating the brake and shift pedals 6-28
Checking and lubricating the brake and clutch levers 6-28
Checking and lubricating the sidestand 6-29
Checking the front fork 6-29
Checking the steering 6-30
Checking the wheel bearings 6-31
Battery 6-31
Replacing the fuses 6-33
Replacing the headlight bulb 6-34
Replacing a turn signal light bulb or the tail/brake light bulb 6-35
Supporting the motorcycle 6-36
Front wheel 6-37
Rear wheel 6-38
Troubleshooting 6-40
Troubleshooting chart 6-41

EAU00462

EAU01790

Safety is an obligation of the owner. Periodic inspection, adjustment and lubrication will keep your vehicle in the safest and most efficient condition possible. The most important points of motorcycle inspection, adjustment, and lubrication are explained on the following pages.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any repair establishment or individual that is certified (if applicable).

EW000060

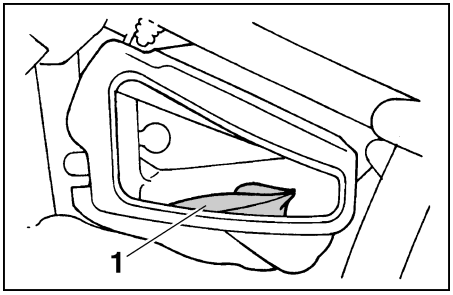
⚠ WARNING

If you are not familiar with motorcycle maintenance work, have a Yamaha dealer do it for you.

EAU00467

PERIODIC MAINTENANCE

PROPER PERIODIC MAINTENANCE OF YOUR MOTORCYCLE IS IMPORTANT IN ORDER TO ENJOY LONG, PLEASURABLE SERVICE. ESPECIALLY IMPORTANT ARE THE MAINTENANCE SERVICES RELATED TO EMISSIONS CONTROL. THESE CONTROLS NOT ONLY FUNCTION TO ENSURE CLEANER AIR, BUT ARE ALSO VITAL TO PROPER ENGINE OPERATION AND MAXIMUM PERFORMANCE. IN THE FOLLOWING PERIODIC MAINTENANCE CHARTS, THE SERVICES RELATED TO EMISSIONS CONTROL ARE GROUPED SEPARATELY. THESE SERVICES REQUIRE SPECIALIZED DATA, KNOWLEDGE, AND EQUIPMENT. YAMAHA DEALERS ARE TRAINED AND EQUIPPED TO PERFORM THESE PARTICULAR SERVICES.



1. Owner's tool kit

EAU04220

Owner's tool kit

The owner's tool kit is located inside the storage compartment. (See page 3-13 for storage compartment opening procedures.)

The service information included in this manual and the tools provided in the owner's tool kit are intended to assist you in the performance of preventive maintenance and minor repairs. However, additional tools such as a torque wrench may be necessary to perform certain maintenance work correctly.

NOTE:
If you do not have the tools or experience required for a particular job, have a Yamaha dealer perform it for you.

EW000062

⚠ WARNING

Modifications not approved by Yamaha may cause loss of performance, excessive emissions, and render the vehicle unsafe for use. Consult a Yamaha dealer before attempting any changes.

EAU00471

Periodic maintenance chart for the emission control system

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
1	*	**Valve clearance**	• Check and adjust valve clearance when engine is cold.	√	√	√	√	√	√
2		**Spark plugs**	• Check condition. • Adjust gap and clean. • Replace at 8,000 mi (13,000 km) or 12 months.		√	**Replace.**	√	**Replace.**	√
3	*	**Crankcase ventilation system**	• Check ventilation hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
4	*	**Fuel line**	• Check fuel hoses for cracks or damage. • Replace if necessary.		√	√	√	√	√
5	*	**Fuel filter**	• Replace.						√
6	*	**Exhaust system**	• Check for leakage. • Tighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
7	*	**Carburetor synchronization**	• Adjust synchronization of carburetors.	√	√	√	√	√	√
8	*	**Idle speed**	• Check and adjust engine idle speed. • Adjust cable free play.		√	√	√	√	√
9	*	**Evaporative emission control system (For California only)**	• Check control system for damage. • Replace if necessary.				√		√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

EAU00472

General maintenance and lubrication chart

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
1		**Engine oil**	• Replace (warm engine before draining). (See NOTE on page 6-6.)	√	√	√	√	√	√
2		**Engine oil filter element**	• Replace at initial 600 mi (1,000 km) or 1 month, and thereafter every 8,000 mi (13,000 km) or 12 months.	√		√		√	
3	*	**Air filter element**	• Clean or replace if necessary.		√	√	√	√	√
4	*	**Clutch**	• Check operation. • Adjust or replace cable.	√	√	√	√	√	√
5	*	**Front brake**	• Check operation, fluid level, and for fluid leakage. (See NOTE on page 6-6.) • Correct accordingly. • Replace brake pads if necessary.	√	√	√	√	√	√
6	*	**Rear brake**	• Check operation. • Adjust cable and replace brake shoes if necessary.	√	√	√	√	√	√
7		**Final gear oil**	• Check oil level and for oil leakage. • Replace at initial 600 mi (1,000 km) or 1 month, and thereafter every 15,000 mi (24,000 km) or 24 months. #4	**Replace.**	√	√	√	**Replace.**	√
8	*	**Wheels**	• Check balance, runout, spoke tightness and for damage. • Tighten spokes and rebalance or replace if necessary.		√	√	√	√	√
9	*	**Tires**	• Check tire tread wear and for damage. • Replace if necessary.		√	√	√	√	√

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
10	*	**Wheel bearings**	• Check bearings for looseness or damage. • Replace if necessary.		√	√	√	√	√
11	*	**Swingarm**	• Check swing arm pivot for play. • Correct if necessary. • Moderately repack every 15,000 mi (24,000 km) or 24 months. #2			√		**Repack.**	
12	*	**Steering bearings**	• Check bearing play and steering for smooth operation. • Correct if necessary. • Moderately repack every 15,000 mi (24,000 km) or 24 months. #3	√		√		**Repack.**	√
13	*	**Chassis fasteners**	• Check all nuts, bolts and screws for tightness. • Tighten if necessary.	√	√	√	√	√	√
14		**Sidestand**	• Check operation. • Lubricate pivot and contact surfaces with chain lube lightly. #1 • Repair if necessary.	√	√	√	√	√	√
15	*	**Sidestand switch**	• Check operation. • Replace if necessary.	√	√	√	√	√	√
16	*	**Front fork**	• Check operation and for oil leakage. • Repair if necessary.		√	√	√	√	√
17	*	**Rear shock absorber**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
18	*	**Control and meter cable**	• Apply chain lube thoroughly. #1	√	√	√	√	√	√

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
19		Brake and clutch lever pivot shaft	• Apply chain lube lightly. #1		√	√	√	√	√
20		Brake pedal and shift pedal shaft	• Apply chain lube lightly. #1		√	√	√	√	√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

#1 Yamaha Chain and Cable Lube or engine oil SAE 10W-30 (API SE)
#2 Molybdenum disulfide grease
#3 Lithium-soap-based grease (all-purpose grease)
#4 Hypoid gear oil SAE 80 (API GL4)

EAU03907

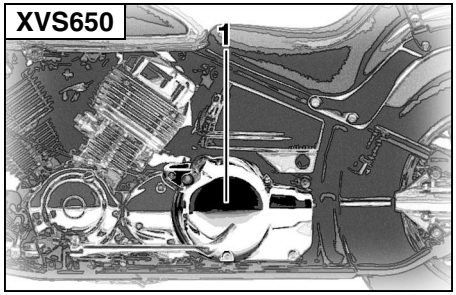
NOTE:

From 24,000 mi (37,000 km) or 36 months, repeat the maintenance intervals starting from 4,000 mi (7,000 km) or 6 months.

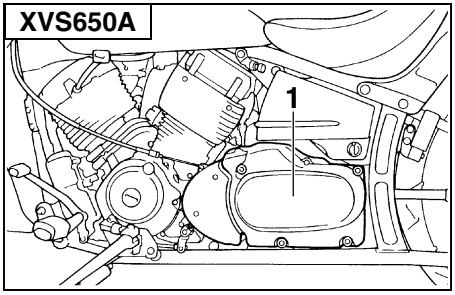
EAU03234

NOTE:

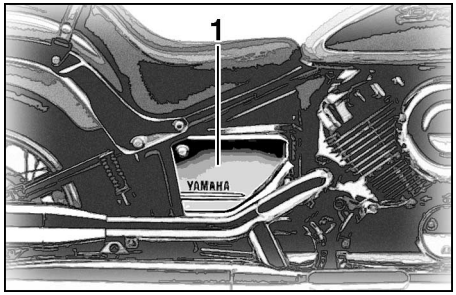
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake service
  - Regularly check and, if necessary, correct the brake fluid level.
  - Every two years replace the internal components of the brake master cylinder and caliper, and change the brake fluid.
  - Replace the brake hoses every four years and if cracked or damaged.
- Engine oil type
  - Yamalube 4 (20W-40) or engine oil SAE 20W-40 (API SE) for temperatures of 5 °C (40 °F) or above.
  - Yamalube 4 (10W-30) or engine oil SAE 10W-30 (API SE) for temperatures of 15 °C (60 °F) or below.



1. Panel A



1. Panel A

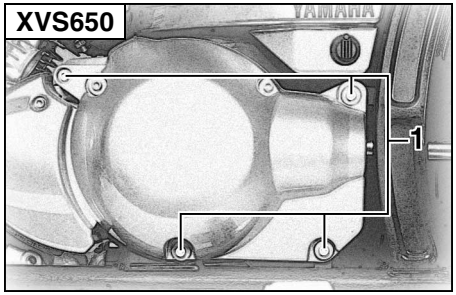


1. Panel B

EAU01122

Removing and installing panels

The panels shown above need to be removed to perform some of the maintenance jobs described in this chapter. Refer to this section each time a panel needs to be removed and installed.



1. Bolt (× 4)

EAU01573

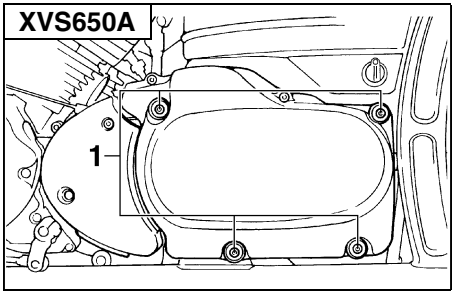
Panel A

To remove the panel

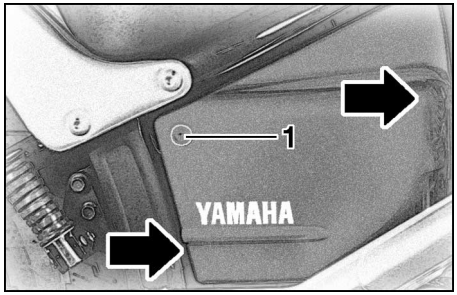
Remove the bolts, and then take the panel off.

To install the panel

Place the panel in the original position, and then install the bolts.



1. Bolt (× 4)



1. Screw

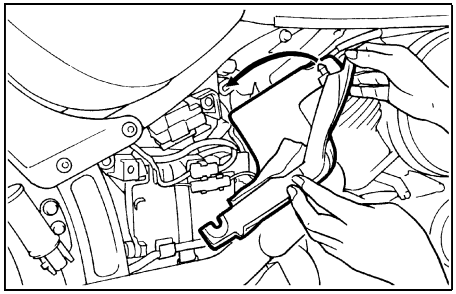
EAU04807

Panel B

To remove the panel

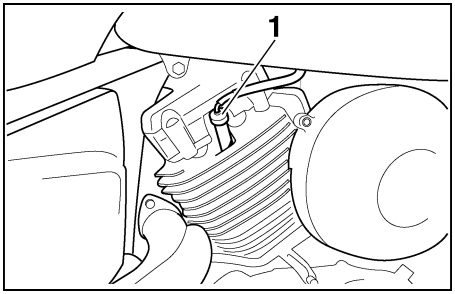
Remove the screw, and then pull outward on the areas shown.

6



To install the panel

Place the panel in the original position, and then install the screw.



1. Spark plug cap

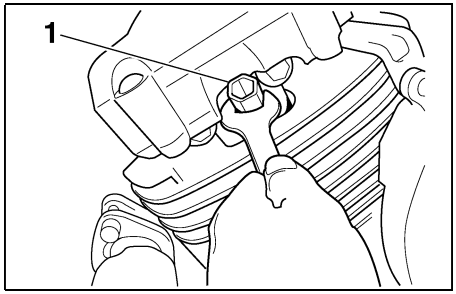
EAU03329

Checking the spark plugs

The spark plugs are important engine components, which are easy to check. Since heat and deposits will cause any spark plug to slowly erode, the spark plugs should be removed and checked in accordance with the periodic maintenance and lubrication chart. In addition, the condition of the spark plugs can reveal the condition of the engine.

To remove a spark plug

1. Remove the spark plug cap.



1. Spark plug wrench

2. Remove the spark plug as shown, with the spark plug wrench included in the owner's tool kit.

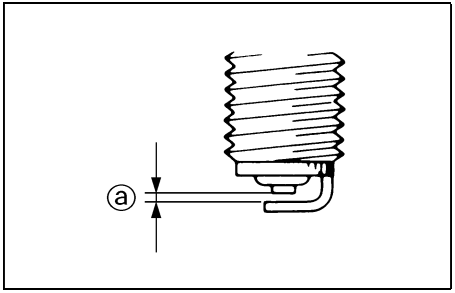
To check the spark plugs

1. Check that the porcelain insulator around the center electrode on each spark plug is a medium-to-light tan (the ideal color when the motorcycle is ridden normally).
2. Check that all spark plugs installed in the engine have the same color.

NOTE:
If any spark plug shows a distinctly different color, the engine could be defective. Do not attempt to diagnose such problems yourself. Instead, have a Yamaha dealer check the motorcycle.

3. Check each spark plug for electrode erosion and excessive carbon or other deposits, and replace it if necessary.

Specified spark plug:
DPR7EA-9 (NGK) or
X22EPR-U9 (DENSO)



a. Spark plug gap

To install a spark plug

1. Measure the spark plug gap with a wire thickness gauge and, if necessary, adjust the gap to specification.

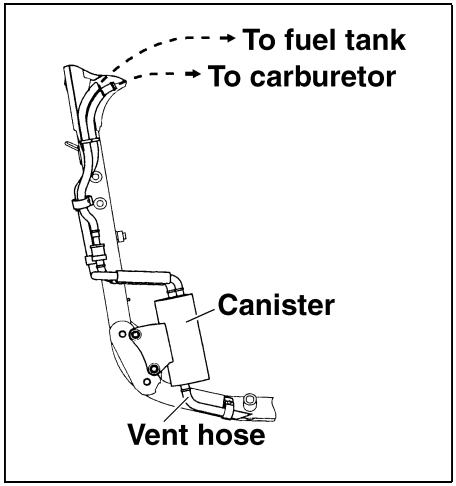
Spark plug gap:
0.8–0.9 mm (0.03–0.04 in)

2. Clean the surface of the spark plug gasket and its mating surface, and then wipe off any grime from the spark plug threads.
3. Install the spark plug with the spark plug wrench, and then tighten it to the specified torque.

Tightening torque:
Spark plug:
18 Nm (1.8 m·kgf, 13 ft·lbf)

NOTE:
If a torque wrench is not available when installing a spark plug, a good estimate of the correct torque is 1/4–1/2 turn past finger tight. However, the spark plug should be tightened to the specified torque as soon as possible.

4. Install the spark plug cap.



EAU01796

Canister (for California only)

This model is equipped with a canister to prevent the discharging of fuel vapor into the atmosphere.

- Check each hose connection.
- Check each hose and canister for cracks or damage. Replace if damaged.
- Make sure the vent hose is not blocked. Clean it if necessary.

EAU04612

Engine oil and oil filter element

The engine oil level should be checked before each ride. In addition, the oil must be changed and the oil filter element replaced at the intervals specified in the periodic maintenance and lubrication chart.

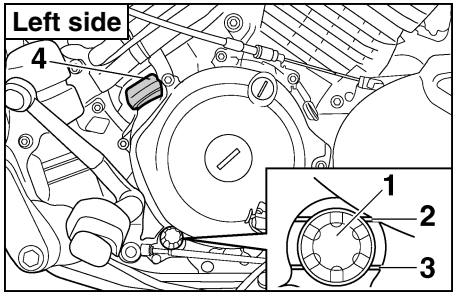
To check the engine oil level

1. Place the motorcycle on a level surface and hold it in an upright position.

NOTE:

Make sure that the motorcycle is positioned straight up when checking the oil level. A slight tilt to the side can result in a false reading.

2. Start the engine, warm it up for several minutes, and then turn it off.



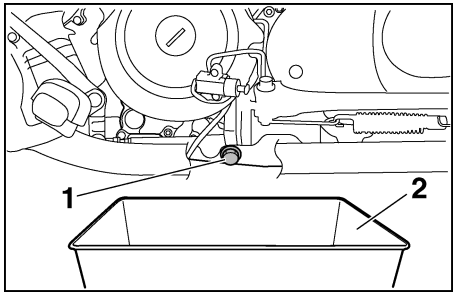
1. Engine oil level check window
2. Maximum level mark
3. Minimum level mark
4. Engine oil filler cap

3. Wait a few minutes until the oil settles, and then check the oil level through the check window located at the bottom-left side of the crankcase.

NOTE:

The engine oil should be between the minimum and maximum level marks.

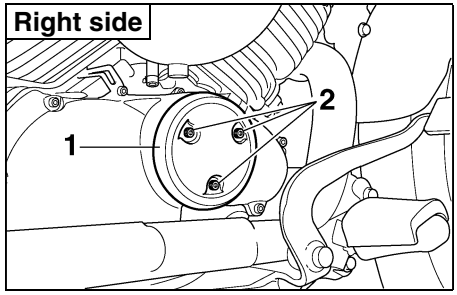
4. If the engine oil is below the minimum level mark, add sufficient oil of the recommended type to raise it to the correct level.



1. Engine oil drain bolt
2. Oil pan

To change the engine oil (with or without oil filter element replacement)

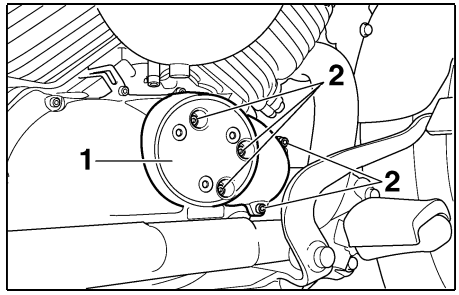
1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place an oil pan under the engine to collect the used oil.
3. Remove the engine oil filler cap and drain bolt to drain the oil from the crankcase.



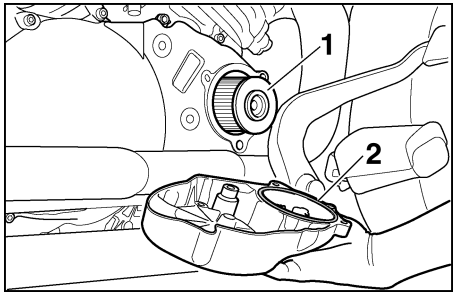
1. Oil filter element outer cover
2. Bolt (× 3)

NOTE:
Skip steps 4–7 if the oil filter element is not being replaced.

4. Remove the outer and inner oil filter element covers by removing the bolts.



1. Oil filter element inner cover
2. Bolt (× 5)



1. Oil filter element
2. O-ring

5. Remove the oil filter element and O-ring.
6. Install a new oil filter element and the O-ring.
7. Install the oil filter element covers by installing the bolts.
8. Install the engine oil drain bolt, and then tighten it to the specified torque.

Tightening torque:
Engine oil drain bolt:
43 Nm (4.3 m·kgf, 31 ft·lbf)

9. Add the specified amount of the recommended oil, and then install and tighten the oil filler cap.

Recommended engine oil:
See page 8-1.
Oil quantity:
Without oil filter element replacement:
2.6 L (2.3 Imp qt, 2.8 US qt)
With oil filter element replacement:
2.8 L (2.5 Imp qt, 3.0 US qt)
Total amount (dry engine):
3.2 L (2.8 Imp qt, 3.4 US qt)

ECA00133

CAUTION:

- **In order to prevent clutch slippage (since the engine oil also lubricates the clutch), do not mix any chemical additives. Do not use oils with a diesel specification of "CD" or oils of a higher quality than specified. In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.**
- **Make sure that no foreign material enters the crankcase.**

10. Start the engine, and then let it idle for several minutes while checking it for oil leakage. If oil is leaking, immediately turn the engine off and check for the cause.
11. Turn the engine off, and then check the oil level and correct it if necessary.

EAU04083

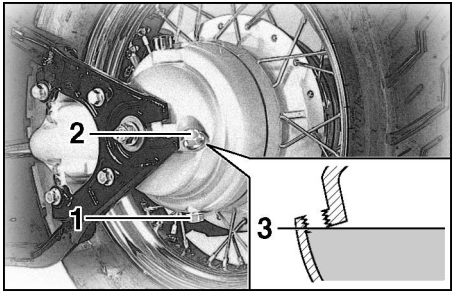
Final gear oil

The final gear case must be checked for oil leakage before each ride. If any leakage is found, have a Yamaha dealer check and repair the motorcycle. In addition, the final gear oil level must be checked and the oil changed as follows at the intervals specified in the periodic maintenance and lubrication chart.

EW000066

⚠ WARNING

- **Make sure that no foreign material enters the final gear case.**
- **Make sure that no oil gets on the tire or wheel.**



1. Final gear oil drain bolt
2. Final gear oil filler bolt
3. Correct oil level

To check the final gear oil level

1. Place the motorcycle on a level surface and hold it in an upright position.

NOTE:

- The final gear oil level must be checked on a cold engine.
- Make sure that the motorcycle is positioned straight up when checking the oil level. A slight tilt to the side can result in a false reading.

2. Remove the oil filler bolt, and then check the oil level in the final gear case.

NOTE:

The oil level should be at the brim of the filler hole.

3. If the oil is below the brim of the filler hole, add sufficient oil of the recommended type to raise it to the correct level.

To change the final gear oil

1. Place an oil pan under the final gear case to collect the used oil.
2. Remove the oil filler bolt and drain bolt to drain the oil from the final gear case.
3. Install the final gear oil drain bolt, and then tighten it to the specified torque.

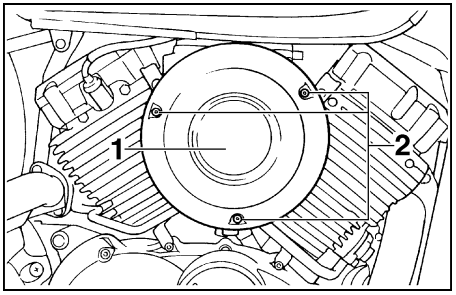
Tightening torque:
Final gear oil drain bolt:
23 Nm (2.3 m·kgf, 17 ft·lbf)

4. Add the recommended final gear oil to the brim of the filler hole.

Recommended final gear oil:
Hypoid gear oil SAE 80 (API GL4) or multi-grade hypoid gear oil SAE 80W-90
Oil quantity:
0.19 L (0.17 Imp qt, 0.20 US qt)

NOTE:
GL4 is a quality rating. Hypoid gear oils rated GL5 or GL6 may also be used.

5. Install and tighten the oil filler bolt.
6. Check the final gear case for oil leakage. If oil is leaking, check for the cause.



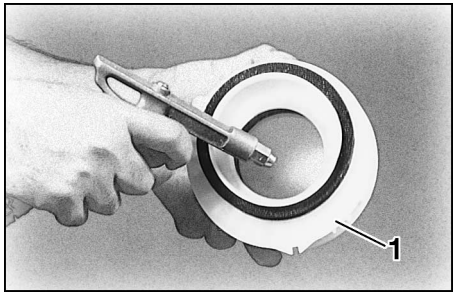
1. Air filter case cover
2. Screw (× 3)

EAU00586*

Cleaning the air filter element

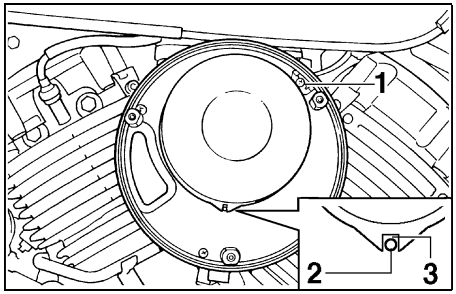
The air filter element should be cleaned at the intervals specified in the periodic maintenance and lubrication chart. Clean the air filter element more frequently if you are riding in unusually wet or dusty areas.

1. Remove the air filter case cover by removing the screws.
2. Pull the air filter element out.



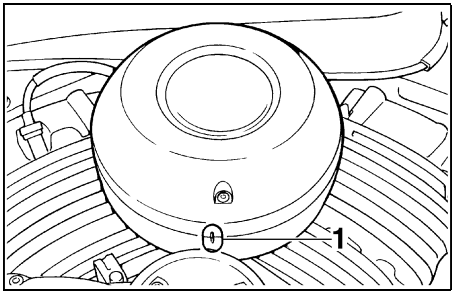
1. Air filter element

3. Lightly tap the air filter element to remove most of the dust and dirt, and then blow the remaining dirt out with compressed air as shown. If the air filter element is damaged, replace it.



1. Air filter element holder
2. Projection
3. Slot

4. Insert the air filter element into the air filter case as shown.



1. Match marks

EC000082*

CAUTION:

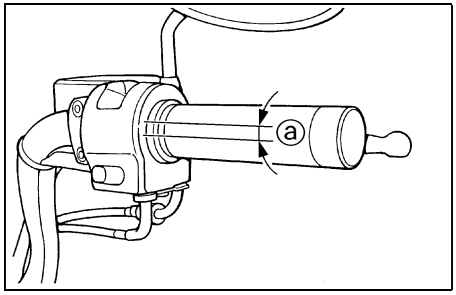
- **Make sure that the air filter element is properly seated in the air filter case.**
- **The engine should never be operated without the air filter element installed, otherwise the pistons and/or cylinders may become excessively worn.**

5. Install the air filter case cover by aligning the match marks and installing the screws.

EAU00628

Adjusting the carburetors

The carburetors are important parts of the engine and emission control system, which require very sophisticated adjustment. Therefore, all carburetor adjustments should be left to a Yamaha dealer, who has the necessary professional knowledge and experience.



a. Throttle cable free play

EAU00635

Adjusting the throttle cable free play

The throttle cable free play should measure 4–6 mm (0.16–0.24 in) at the throttle grip. Periodically check the throttle cable free play and, if necessary, have a Yamaha dealer adjust it.

EAU00637

Adjusting the valve clearance

The valve clearance changes with use, resulting in improper air-fuel mixture and/or engine noise. To prevent this from occurring, the valve clearance must be adjusted by a Yamaha dealer at the intervals specified in the periodic maintenance and lubrication chart.

EAU03360

Tires

To maximize the performance, durability, and safe operation of your motorcycle, note the following points regarding the specified tires.

Tire air pressure

The tire air pressure should be checked and, if necessary, adjusted before each ride.

EW000082

⚠ WARNING

- **The tire air pressure must be checked and adjusted on cold tires (i.e., when the temperature of the tires equals the ambient temperature).**
- **The tire air pressure must be adjusted in accordance with the riding speed and with the total weight of rider, passenger, cargo, and accessories approved for this model.**

XVS650

Tire air pressure (measured on cold tires)		
Load*	Front	Rear
Up to 90 kg (198 lb)	200 kPa (2.00 kgf/cm^2, 29 psi)	225 kPa (2.25 kgf/cm^2, 33 psi)
90 kg (198 lb)– maximum	200 kPa (2.00 kgf/cm^2, 29 psi)	250 kPa (2.50 kgf/cm^2, 36 psi)

Maximum load*	180 kg (397 lb)

* Total weight of rider, passenger, cargo and accessories

XVS650A

Tire air pressure (measured on cold tires)		
Load*	Front	Rear
Up to 90 kg (198 lb)	225 kPa (2.25 kgf/cm^2, 33 psi)	225 kPa (2.25 kgf/cm^2, 33 psi)
90 kg (198 lb)– maximum	225 kPa (2.25 kgf/cm^2, 33 psi)	250 kPa (2.50 kgf/cm^2, 36 psi)

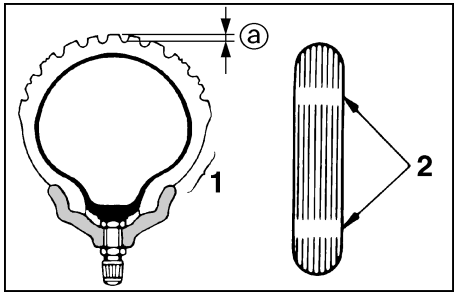
Maximum load*	200 kg (441 lb)

* Total weight of rider, passenger, cargo and accessories

EW000083

⚠ WARNING

Proper loading of your motorcycle is important for several characteristics of your motorcycle, such as handling, braking, performance and safety. Do not carry loosely packed items that can shift. Securely pack your heaviest items close to the center of the motorcycle, and distribute the weight evenly from side to side. Properly adjust the suspension for your load, and check the condition and pressure of your tires. NEVER OVERLOAD YOUR MOTORCYCLE. Make sure the total weight of the cargo, rider, passenger, and accessories (cowling, saddlebags, etc. if approved for this model) does not exceed the maximum load of the motorcycle. Operation of an overloaded motorcycle could cause tire damage, an accident, or even injury.



1. Tire sidewall
2. Tire wear indicator

a. Tire tread depth

Tire inspection

Always check the tires before operating the motorcycle. If a tire tread shows crosswise lines (minimum tread depth), if the tire has a nail or glass fragments in it, or if the sidewall is cracked, contact a Yamaha dealer immediately and have the tire replaced.

FRONT (XVS650)

Manufacturer	Size	Model
Bridgestone	100/90-19 57S	L309
	100/90-19 M/C 57S	
Dunlop	100/90-19 57S	F24
	100/90-19 M/C 57S	

REAR (XVS650)

Manufacturer	Size	Model
Bridgestone	170/80-15M/C 77S	G546
Dunlop	170/80-15M/C 77S	K555

FRONT (XVS650A)

Manufacturer	Size	Model
Bridgestone	130/90-16 67S	G703
	130/90-16 M/C 67S	
Dunlop	130/90-16 67S	D404F
	130/90-16 M/C 67S	

REAR (XVS650A)

Manufacturer	Size	Model
Bridgestone	170/80-15M/C 77S	G702
Dunlop	170/80-15M/C 77S	D404G

Minimum tire tread depth (front and rear)	1.0 mm (0.04 in)

EAU00680

⚠ WARNING

- **It is dangerous to ride with a worn-out tire. When a tire tread begins to show crosswise lines, have a Yamaha dealer replace the tire immediately.**
- **The replacement of all wheel- and brake-related parts, including the tires, should be left to a Yamaha dealer, who has the necessary professional knowledge and experience.**
- **It is not recommended to patch a punctured tube. If unavoidable, however, patch the tube very carefully and replace it as soon as possible with a high-quality product.**

EAU00685

Spoke wheels

To maximize the performance, durability, and safe operation of your motorcycle, note the following points regarding the specified wheels.

- The wheel rims should be checked for cracks, bends or warpage, and the spokes for looseness or damage before each ride. If any damage is found, have a Yamaha dealer replace the wheel. Do not attempt even the smallest repair to the wheel. A deformed or cracked wheel must be replaced.
- The wheel should be balanced whenever either the tire or wheel has been changed or replaced. An unbalanced wheel can result in poor performance, adverse handling characteristics, and a shortened tire life.
- Ride at moderate speeds after changing a tire since the tire surface must first be “broken in” for it to develop its optimal characteristics.

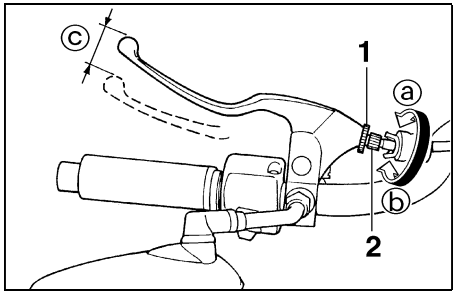
EAU00691

Accessories and replacement parts

EW000098

⚠ WARNING

This motorcycle is not designed to pull a trailer or to be attached to a sidecar. The accessories or replacement parts you choose for your motorcycle should be designed specifically for this model, and they must be securely mounted to maintain the inherent stability of the original design. Genuine Yamaha Parts and Accessories are designed and tested to be compatible with your motorcycle. Please consider Genuine Yamaha Parts and Accessories before making a purchase. Use of non-Yamaha-approved accessories or replacement parts may cause loss of handling stability and riding safety. Since Yamaha cannot control the quality of accessories or parts manufactured by other companies, Yamaha cannot be held liable for any consequences caused by the use of items which have not been approved by Yamaha.



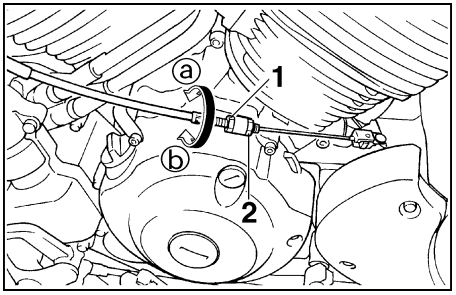
1. Locknut
2. Clutch lever free play adjusting bolt
c. Clutch lever free play

EAU00694

Adjusting the clutch lever free play

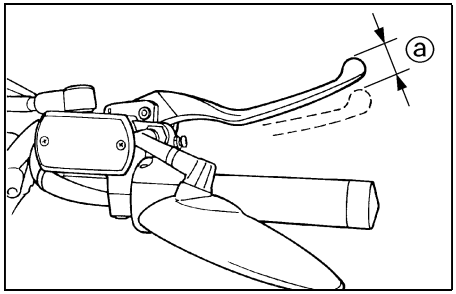
The clutch lever free play should measure 10–15 mm (0.39–0.59 in) [XVS650] or 5–10 mm (0.20–0.39 in) [XVS650A] as shown. Periodically check the clutch lever free play and, if necessary, adjust it as follows.

1. Loosen the locknut at the clutch lever.
2. To increase the clutch lever free play, turn the adjusting bolt in direction ⓐ. To decrease the clutch lever free play, turn the adjusting bolt in direction ⓑ.



1. Clutch lever free play adjusting nut
2. Locknut

3. If the specified clutch lever free play could be obtained as described above, tighten the locknut and skip the rest of the procedure, otherwise proceed as follows.
4. Fully turn the adjusting bolt at the clutch lever in direction ⓐ to loosen the clutch cable.
5. Loosen the locknut at the crankcase.
6. To increase the clutch lever free play, turn the adjusting nut in direction ⓐ. To decrease the clutch lever free play, turn the adjusting nut in direction ⓑ.
7. Tighten the locknut at the clutch lever and the crankcase.

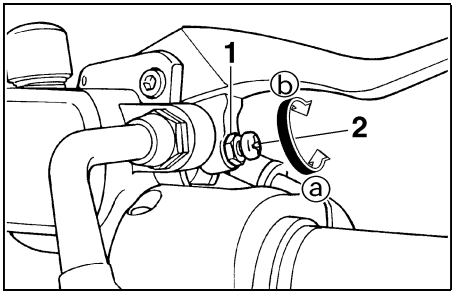


a. Brake lever free play

EAU00696

Adjusting the brake lever free play

The brake lever free play should measure 10–15 mm (0.39–0.59 in) as shown. Periodically check the brake lever free play and, if necessary, adjust it as follows.



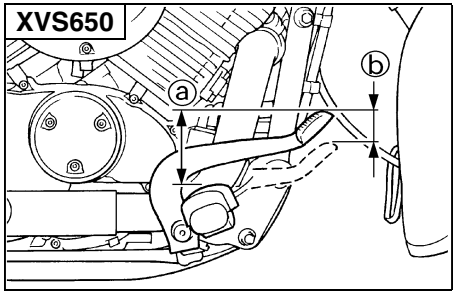
1. Locknut
2. Brake lever free play adjusting bolt

1. Loosen the locknut at the brake lever.
2. To increase the brake lever free play, turn the adjusting bolt in direction ⓐ. To decrease the brake lever free play, turn the adjusting bolt in direction ⓑ.
3. Tighten the locknut.

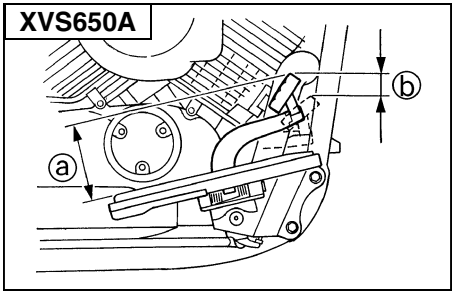
EW000099

⚠ WARNING

- **After adjusting the brake lever free play, check the free play and make sure that the brake is working properly.**
- **A soft or spongy feeling in the brake lever can indicate the presence of air in the hydraulic system. If there is air in the hydraulic system, have a Yamaha dealer bleed the system before operating the motorcycle. Air in the hydraulic system will diminish the braking performance, which may result in loss of control and an accident.**



a. Distance between brake pedal and footrest
b. Brake pedal free play



a. Distance between brake pedal and footrest
b. Brake pedal free play

EAU00711

Adjusting the brake pedal position and free play

EW000104

⚠ WARNING

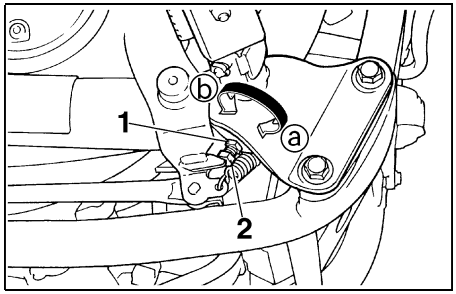
It is advisable to have a Yamaha dealer make these adjustments.

NOTE:

The brake pedal position should be adjusted before adjusting the brake pedal free play.

Brake pedal position

The brake pedal should be positioned approximately 82 mm (3.23 in) [XVS650] or 108 mm (4.25 in) [XVS650A] above the top of the footrest as shown. Periodically check the brake pedal position and, if necessary, adjust it as follows.



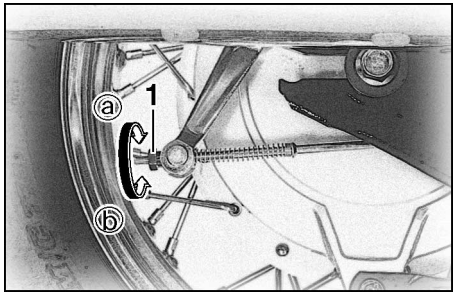
1. Locknut
2. Brake pedal position adjusting bolt

1. Loosen the locknut at the brake pedal.
2. To raise the brake pedal, turn the adjusting bolt in direction ⓐ. To lower the brake pedal, turn the adjusting bolt in direction ⓑ.
3. Tighten the locknut.

EWA00044

⚠ WARNING

After adjusting the brake pedal position, the brake pedal free play must be adjusted.

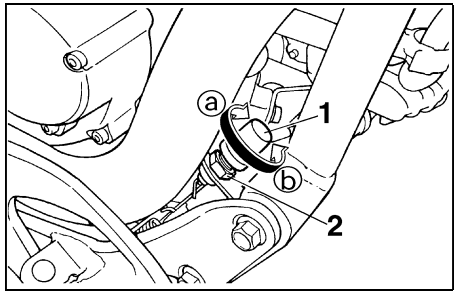


1. Brake pedal free play adjusting nut

Brake pedal free play

The brake pedal free play should measure 20–30 mm (0.79–1.18 in) at the brake pedal end. Periodically check the brake pedal free play and, if necessary, adjust it as follows.

To increase the brake pedal free play, turn the adjusting nut at the brake rod in direction ⓐ. To decrease the brake pedal free play, turn the adjusting nut in direction ⓑ.



1. Rear brake light switch
2. Rear brake light switch adjusting nut

EAU00713

Adjusting the rear brake light switch

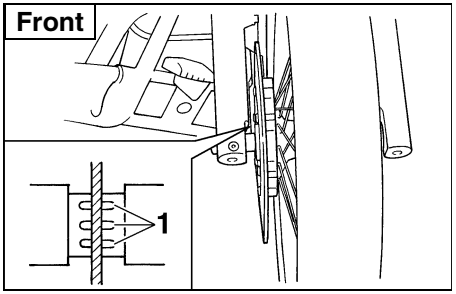
The rear brake light switch, which is activated by the brake pedal, is properly adjusted when the brake light comes on just before braking takes effect. If necessary, adjust the brake light switch as follows.

Turn the adjusting nut while holding the rear brake light switch in place. To make the brake light come on earlier, turn the adjusting nut in direction ⓐ. To make the brake light come on later, turn the adjusting nut in direction ⓑ.

EAU00720

Checking the front brake pads and rear brake shoes

The front brake pads and the rear brake shoes must be checked for wear at the intervals specified in the periodic maintenance and lubrication chart.

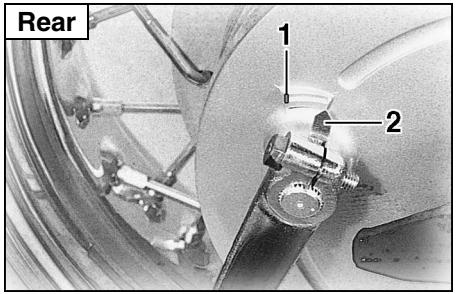


1. Brake pad wear indicator groove (× 3)

EAU03938

Front brake pads

Each front brake pad is provided with wear indicator grooves, which allow you to check the brake pad wear without having to disassemble the brake. To check the brake pad wear, check the wear indicator grooves. If a brake pad has worn to the point that the wear indicator grooves have almost disappeared, have a Yamaha dealer replace the brake pads as a set.

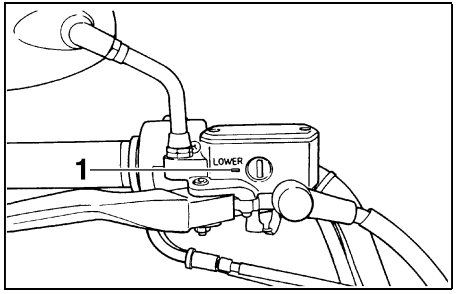


1. Brake shoe wear limit line
2. Brake shoe wear indicator

EAU04502

Rear brake shoes

The rear brake is provided with a wear indicator, which allows you to check the brake shoe wear without having to disassemble the brake. To check the brake shoe wear, check the position of the wear indicator while applying the brake. If a brake shoe has worn to the point that the wear indicator reaches the wear limit line, have a Yamaha dealer replace the brake shoes as a set.



1. Minimum level mark

EAU03294

Checking the brake fluid level

Insufficient brake fluid may allow air to enter the brake system, possibly causing it to become ineffective.

Before riding, check that the brake fluid is above the minimum level mark and replenish if necessary. A low brake fluid level may indicate worn brake pads and/or brake system leakage. If the brake level is low, be sure to check the brake pads for wear and the brake system for leakage.

Observe these precautions:

- When checking the fluid level, make sure that the top of the brake fluid reservoir is level.
- Use only the recommended quality brake fluid, otherwise the rubber seals may deteriorate, causing leakage and poor braking performance.

Recommended brake fluid: DOT 4

- Refill with the same type of brake fluid. Mixing fluids may result in a harmful chemical reaction and lead to poor braking performance.
- Be careful that water does not enter the brake fluid reservoir when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.
- Brake fluid may deteriorate painted surfaces or plastic parts. Always clean up spilled fluid immediately.
- As the brake pads wear, it is normal for the brake fluid level to gradually go down. However, if the brake fluid level goes down suddenly, have a Yamaha dealer check the cause.

EAU03985

Changing the brake fluid

Have a Yamaha dealer change the brake fluid at the intervals specified in the NOTE after the periodic maintenance and lubrication chart. In addition, have the oil seals of the brake master cylinder and caliper as well as the brake hose replaced at the intervals listed below or whenever they are damaged or leaking.

- Oil seals: Replace every two years.
- Brake hose: Replace every four years.

EAU03297

Checking and lubricating the cables

The operation of all control cables and the condition of the cables should be checked before each ride, and the cables and cable ends should be lubricated if necessary. If a cable is damaged or does not move smoothly, have a Yamaha dealer check or replace it.

Recommended lubricant:
Yamaha Chain and Cable Lube
or
engine oil SAE 10W-30 (API SE)

EW000111

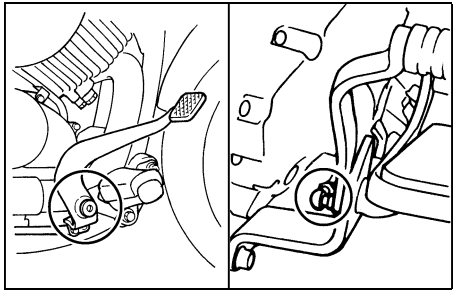
⚠ WARNING

Damage to the outer housing of cables may result in internal rusting and cause interference with cable movement. Replace damaged cables as soon as possible to prevent unsafe conditions.

EAU04034

Checking and lubricating the throttle grip and cable

The operation of the throttle grip should be checked before each ride. In addition, the cable should be lubricated or replaced at the intervals specified in the periodic maintenance chart.

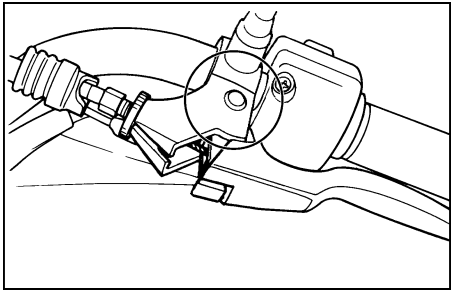


EAU03370

Checking and lubricating the brake and shift pedals

The operation of the brake and shift pedals should be checked before each ride, and the pedal pivots should be lubricated if necessary.

Recommended lubricant:
Lithium-soap-based grease (all-purpose grease)

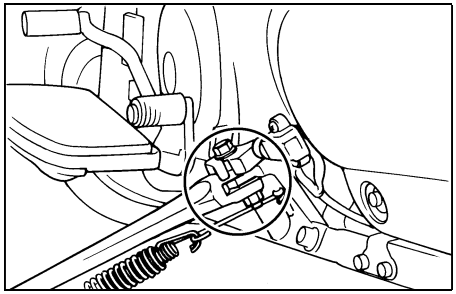


EAU03164

Checking and lubricating the brake and clutch levers

The operation of the brake and clutch levers should be checked before each ride, and the lever pivots should be lubricated if necessary.

Recommended lubricant:
Lithium-soap-based grease (all-purpose grease)



EAU03165

Checking and lubricating the sidestand

The operation of the sidestand should be checked before each ride, and the sidestand pivot and metal-to-metal contact surfaces should be lubricated if necessary.

EW000113

⚠ WARNING

If the sidestand does not move up and down smoothly, have a Yamaha dealer check or repair it.

Recommended lubricant:
Lithium-soap-based grease (all-purpose grease)

EAU02939

Checking the front fork

The condition and operation of the front fork must be checked as follows at the intervals specified in the periodic maintenance and lubrication chart.

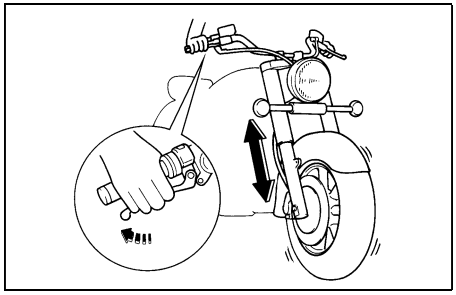
To check the condition

EW000115

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

Check the inner tubes for scratches, damage and excessive oil leakage.



To check the operation

1. Place the motorcycle on a level surface and hold it in an upright position.
2. While applying the front brake, push down hard on the handlebars several times to check if the front fork compresses and rebounds smoothly.

EC000098

CAUTION:

If any damage is found or the front fork does not operate smoothly, have a Yamaha dealer check or repair it.

EAU00794

Checking the steering

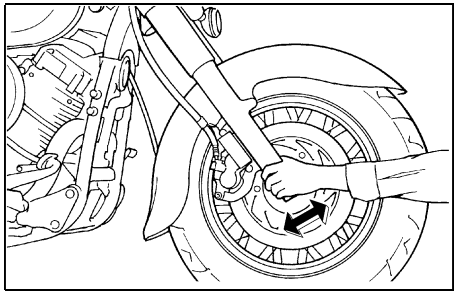
Worn or loose steering bearings may cause danger. Therefore, the operation of the steering must be checked as follows at the intervals specified in the periodic maintenance and lubrication chart.

1. Place a stand under the engine to raise the front wheel off the ground.

EW000115

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.



2. Hold the lower ends of the front fork legs and try to move them forward and backward. If any free play can be felt, have a Yamaha dealer check or repair the steering.

EAU01144

Checking the wheel bearings

The front and rear wheel bearings must be checked at the intervals specified in the periodic maintenance and lubrication chart. If there is play in the wheel hub or if the wheel does not turn smoothly, have a Yamaha dealer check the wheel bearings.

EAU04242

Battery

The battery is located behind panel B. (See page 6-8 for panel removal and installation procedures.)

This motorcycle is equipped with a sealed-type (MF) battery, which does not require any maintenance. There is no need to check the electrolyte or to add distilled water.

EC000101

CAUTION:

Never attempt to remove the battery cell seals, as this would permanently damage the battery.

EW000116

⚠ WARNING

- **Electrolyte is poisonous and dangerous since it contains sulfuric acid, which causes severe burns. Avoid any contact with skin, eyes or clothing and always shield your eyes when working near batteries. In case of contact, administer the following FIRST AID.**
  - **EXTERNAL: Flush with plenty of water.**
  - **INTERNAL: Drink large quantities of water or milk and immediately call a physician.**
  - **EYES: Flush with water for 15 minutes and seek prompt medical attention.**
- **Batteries produce explosive hydrogen gas. Therefore, keep sparks, flames, cigarettes, etc., away from the battery and provide sufficient ventilation when charging it in an enclosed space.**
- **KEEP THIS AND ALL BATTERIES OUT OF THE REACH OF CHILDREN.**

To charge the battery

Have a Yamaha dealer charge the battery as soon as possible if it seems to have discharged. Keep in mind that the battery tends to discharge more quickly if the motorcycle is equipped with optional electrical accessories.

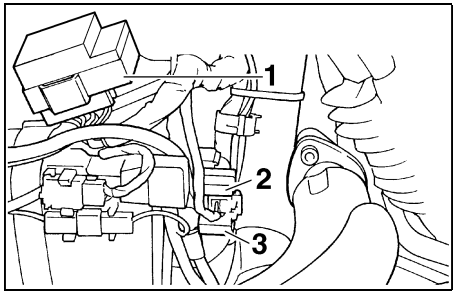
To store the battery

1. If the motorcycle will not be used for more than one month, remove the battery, fully charge it, and then place it in a cool, dry place.
2. If the battery will be stored for more than two months, check it at least once a month and fully charge it if necessary.
3. Fully charge the battery before installation.
4. After installation, make sure that the battery leads are properly connected to the battery terminals.

EC000102

CAUTION:

- **Always keep the battery charged. Storing a discharged battery can cause permanent battery damage.**
- **To charge a sealed-type (MF) battery, a special (constant-voltage) battery charger is required. Using a conventional battery charger will damage the battery. If you do not have access to a sealed-type (MF) battery charger, have a Yamaha dealer charge your battery.**



1. Fuse box
2. Main fuse
3. Spare main fuse

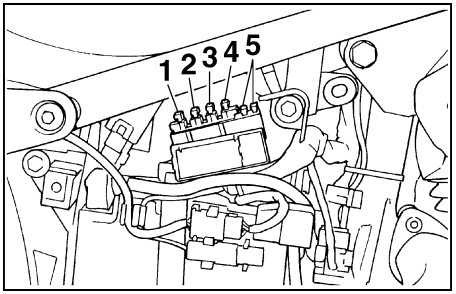
EAU04190*

Replacing the fuses

The main fuse and the fuse box, which contains the fuses for the individual circuits, are located behind panel B. (See page 6-8 for panel removal and installation procedures.)

If a fuse is blown, replace it as follows.

1. Turn the key to “OFF” and turn off the electrical circuit in question.
2. Remove the blown fuse, and then install a new fuse of the specified amperage.



1. Ignition fuse
2. Signaling system fuse
3. Headlight fuse
4. Carburetor heater fuse
5. Spare fuse (× 2)

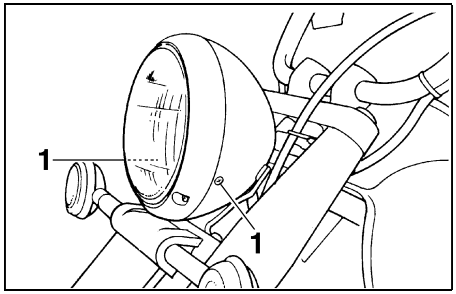
Specified fuses:	
Main fuse:	30 A
Headlight fuse:	15 A
Signaling system fuse:	10 A
Ignition fuse:	10 A
Carburetor heater fuse:	15 A

EC000103

CAUTION:

Do not use a fuse of a higher amperage rating than recommended to avoid causing extensive damage to the electrical system and possibly a fire.

3. Turn the key to “ON” and turn on the electrical circuit in question to check if the device operates.
4. If the fuse immediately blows again, have a Yamaha dealer check the electrical system.



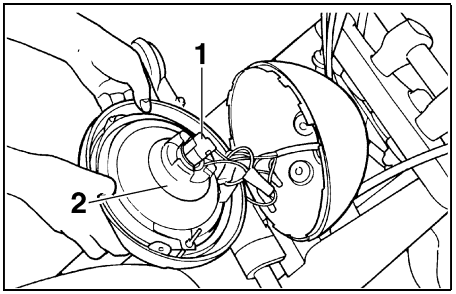
1. Screw (× 2)

EAU04189

Replacing the headlight bulb

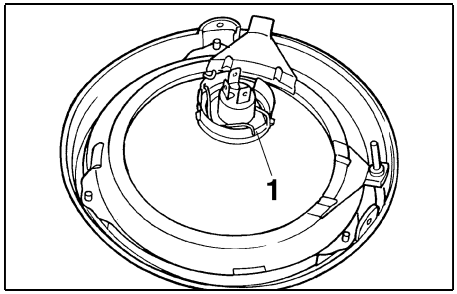
This motorcycle is equipped with a quartz bulb headlight. If the headlight bulb burns out, replace it as follows.

1. Remove the headlight unit by removing the screws.



1. Headlight coupler
2. Headlight bulb cover

2. Disconnect the headlight coupler, and then remove the bulb cover.



1. Headlight bulb holder

3. Unhook the headlight bulb holder, and then remove the defective bulb.

EW000119

⚠ WARNING

Headlight bulbs get very hot. Therefore, keep flammable products away from a lit headlight bulb, and do not touch the bulb until it has cooled down.

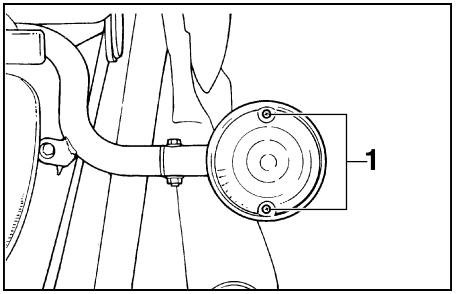
4. Place a new headlight bulb into position, and then secure it with the bulb holder.

EC000105

CAUTION:

Do not touch the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the luminosity of the bulb, and the bulb life will be adversely affected. Thoroughly clean off any dirt and fingerprints on the headlight bulb using a cloth moistened with alcohol or thinner.

5. Install the headlight bulb cover, and then connect the coupler.
6. Install the headlight unit by installing the screws.
7. Have a Yamaha dealer adjust the headlight beam if necessary.

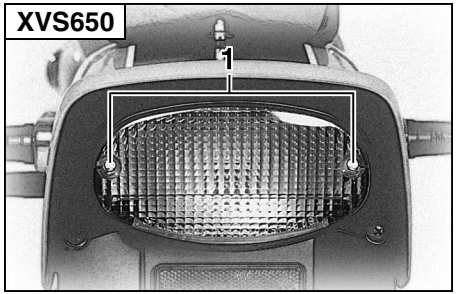


1. Screw (× 2)

EAU00855

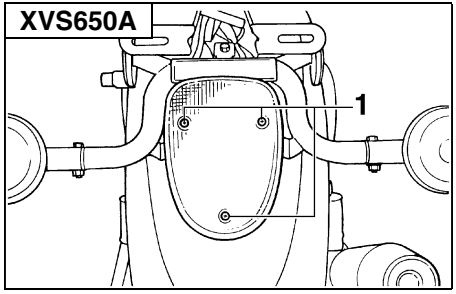
Replacing a turn signal light bulb or the tail/brake light bulb

1. Remove the lens by removing the screws.
2. Remove the defective bulb by pushing it in and turning it counterclockwise.



1. Screw (× 2)

3. Insert a new bulb into the socket, push it in, and then turn it clockwise until it stops.



1. Screw (× 3)

4. Install the lens by installing the screws.

EC000108

CAUTION:

Do not overtighten the screws, otherwise the lens may break.

EAU01579

Supporting the motorcycle

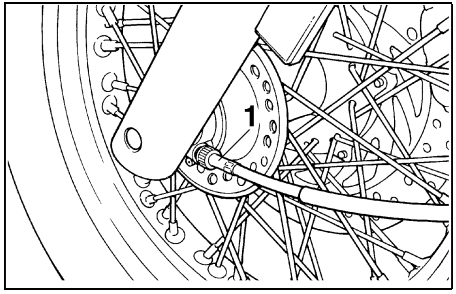
Since this model is not equipped with a centerstand, follow these precautions when removing the front and rear wheel or performing other maintenance requiring the motorcycle to stand upright. Check that the motorcycle is in a stable and level position before starting any maintenance. A strong wooden box can be placed under the engine for added stability.

To service the front wheel

1. Stabilize the rear of the motorcycle by using a motorcycle stand or, if an additional motorcycle stand is not available, by placing a jack under the frame in front of the rear wheel.
2. Raise the front wheel off the ground by using a motorcycle stand.

To service the rear wheel

Raise the rear wheel off the ground by using a motorcycle stand or, if a motorcycle stand is not available, by placing a jack either under each side of the frame in front of the rear wheel or under each side of the swingarm.



1. Speedometer cable

EAU03737

Front wheel

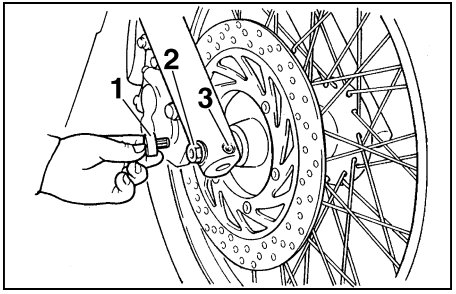
To remove the front wheel

EW000122

⚠ WARNING

- **It is advisable to have a Yamaha dealer service the wheel.**
- **Securely support the motorcycle so that there is no danger of it falling over.**

1. Disconnect the speedometer cable from the front wheel.



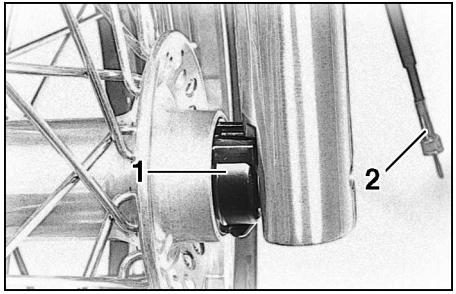
1. Rubber cap
2. Wheel axle
3. Front wheel axle pinch bolt

2. Loosen the front wheel axle pinch bolt.
3. Remove the rubber cap, and then loosen the wheel axle.
4. Lift the front wheel off the ground according to the procedure on page 6-36.
5. Pull the wheel axle out, and then remove the wheel.

ECA00048

CAUTION:

Do not apply the brake after the wheel has been removed together with the brake disc, otherwise the brake pads will be forced shut.



1. Speedometer gear unit
2. Speedometer cable

EAU04352

To install the front wheel

1. Install the speedometer gear unit into the wheel hub so that the projections mesh with the slots.
2. Lift the wheel up between the fork legs.

NOTE:

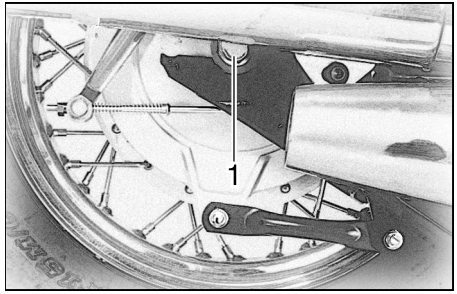
Make sure that there is enough space between the brake pads before inserting the brake disc and that the slot in the speedometer gear unit fits over the retainer on the fork leg.

3. Insert the wheel axle.
4. Lower the front wheel so that it is on the ground.

5. Tighten the wheel axle and front wheel axle pinch bolt to the specified torques, and then install the rubber cap.

Tightening torques:
Wheel axle:
59 Nm (5.9 m·kgf, 43 ft·lbf)
Front wheel axle pinch bolt:
20 Nm (2.0 m·kgf, 14 ft·lbf)

6. While applying the front brake, push down hard on the handlebars several times to check if the front fork compresses and rebounds smoothly.
7. Connect the speedometer cable.



1. Axle nut

EAU01350

Rear wheel

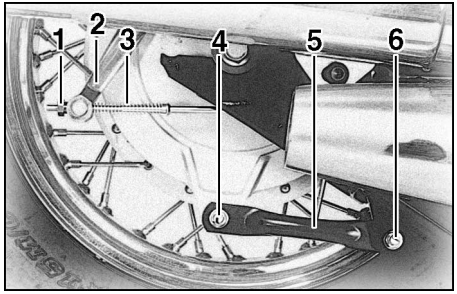
To remove the rear wheel

EW000122

⚠ WARNING

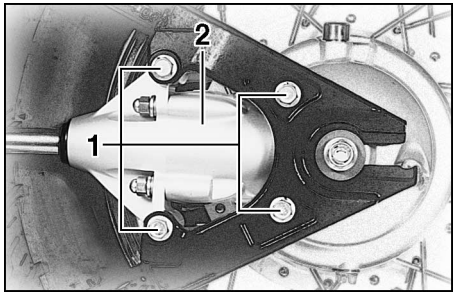
- **It is advisable to have a Yamaha dealer service the wheel.**
- **Securely support the motorcycle so that there is no danger of it falling over.**

1. Loosen the axle nut.



1. Brake pedal free play adjusting nut
2. Brake camshaft lever
3. Brake rod
4. Bolt (shoe plate)
5. Brake torque rod
6. Bolt (swingarm)

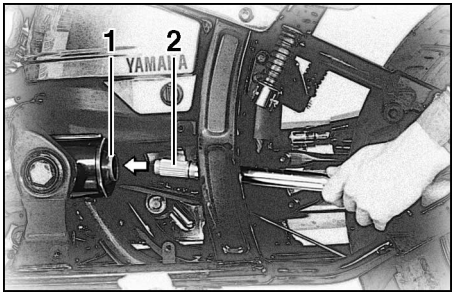
2. Disconnect the brake torque rod from the brake shoe plate by removing the bolt.
3. Loosen the brake torque rod bolt at the swingarm.
4. Remove the brake pedal free play adjusting nut, and then disconnect the brake rod from the brake camshaft lever.
5. Remove panel A. (See page 6-8 for panel removal and installation procedures.)



1. Bolt (× 4)
2. Final gear case

6. Remove the bolts that secure the final gear case to the swingarm.
7. Lift the rear wheel off the ground according to the procedure on page 6-36.
8. While supporting the drive shaft, pull the rear wheel back to remove the following parts as an assembly: wheel, wheel axle, final gear case, and drive shaft.

NOTE:
Make sure to support the drive shaft as it is being pulled out.



1. Middle gear universal joint
2. Drive shaft

EAU04353

To install the rear wheel

1. Install the rear wheel, wheel axle, final gear case, and drive shaft by pushing the wheel forward and guiding the drive shaft into the middle gear universal joint.
2. Install the final gear case bolts.
3. Install the brake rod onto the brake camshaft lever, and then install the brake pedal free play adjusting nut onto the brake rod.
4. Install the brake torque rod bolt at the brake shoe plate.
5. Install the panel.
6. Lower the rear wheel so that it is on the ground.
7. Tighten the axle nut, the final gear case bolts and the brake torque rod bolt to the specified torques.

Tightening torques:
Axle nut:
92 Nm (9.2 m·kgf, 67 ft·lbf)
Final gear case bolt:
74 Nm (7.4 m·kgf, 54 ft·lbf)
Brake torque rod bolt:
20 Nm (2.0 m·kgf, 14 ft·lbf)

8. Adjust the brake pedal free play. (See page 6-23 for brake pedal free play adjustment procedures.)

EW000103

⚠ WARNING

After adjusting the brake pedal free play, check the operation of the brake light.

EAU01008

Troubleshooting

Although Yamaha motorcycles receive a thorough inspection before shipment from the factory, trouble may occur during operation. Any problem in the fuel, compression, or ignition systems, for example, can cause poor starting and loss of power.

The following troubleshooting chart represents a quick and easy procedure for checking these vital systems yourself. However, should your motorcycle require any repair, take it to a Yamaha dealer, whose skilled technicians have the necessary tools, experience, and know-how to service the motorcycle properly.

Use only genuine Yamaha replacement parts. Imitation parts may look like Yamaha parts, but they are often inferior, have a shorter service life and can lead to expensive repair bills.

EAU01297

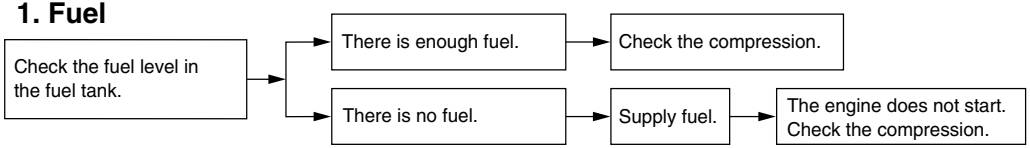
Troubleshooting chart

EW000125

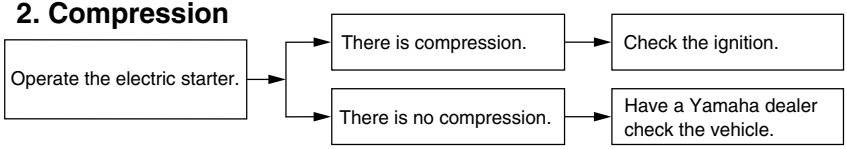
⚠ WARNING

Keep away open flames and do not smoke while checking or working on the fuel system.

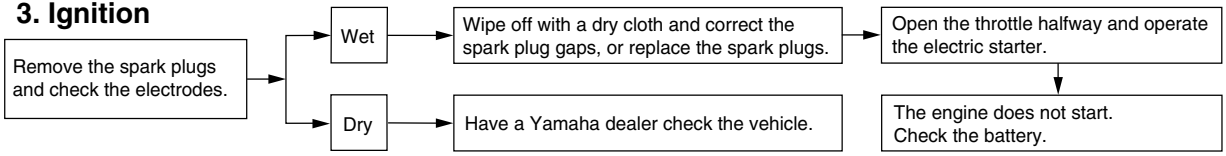
1. Fuel


Check the fuel level in the fuel tank.
There is enough fuel.
Check the compression.
There is no fuel.
Supply fuel.
The engine does not start. Check the compression.

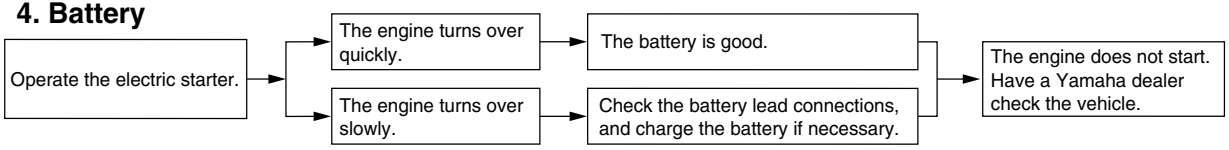
2. Compression


Operate the electric starter.
There is compression.
Check the ignition.
There is no compression.
Have a Yamaha dealer check the vehicle.

3. Ignition


Remove the spark plugs and check the electrodes.
Wet
Wipe off with a dry cloth and correct the spark plug gaps, or replace the spark plugs.
Open the throttle halfway and operate the electric starter.
Dry
Have a Yamaha dealer check the vehicle.
The engine does not start. Check the battery.

4. Battery


Operate the electric starter.
The engine turns over quickly.
The battery is good.
The engine does not start. Have a Yamaha dealer check the vehicle.
The engine turns over slowly.
Check the battery lead connections, and charge the battery if necessary.

MOTORCYCLE CARE AND STORAGE

Care 7-1
Storage 7-4

MOTORCYCLE CARE AND STORAGE

EAU03412

Care

While the open design of a motorcycle reveals the attractiveness of the technology, it also makes it more vulnerable. Rust and corrosion can develop even if high-quality components are used. A rusty exhaust pipe may go unnoticed on a car, however, it detracts from the overall appearance of a motorcycle. Frequent and proper care does not only comply with the terms of the warranty, but it will also keep your motorcycle looking good, extend its life and optimize its performance.

Before cleaning

1. Cover the muffler outlets with plastic bags after the engine has cooled down.
2. Make sure that all caps and covers as well as all electrical couplers and connectors, including the spark plug caps, are tightly installed.
3. Remove extremely stubborn dirt, like oil burnt onto the crankcase, with a degreasing agent and a brush, but never apply such products onto seals, gaskets and wheel axles. Always rinse the dirt and degreaser off with water.

Cleaning

ECA00010

CAUTION:

- **Avoid using strong acidic wheel cleaners, especially on spoked wheels. If such products are used on hard-to-remove dirt, do not leave the cleaner on the affected area any longer than instructed. Also, thoroughly rinse the area off with water, immediately dry it, and then apply a corrosion protection spray.**
- **Improper cleaning can damage windshields, cowlings, panels and other plastic parts. Use only a soft, clean cloth or sponge with mild detergent and water to clean plastic.**

- **Do not use any harsh chemical products on plastic parts. Be sure to avoid using cloths or sponges which have been in contact with strong or abrasive cleaning products, solvent or thinner, fuel (gasoline), rust removers or inhibitors, brake fluid, antifreeze or electrolyte.**
- **Do not use high-pressure washers or steam-jet cleaners since they cause water seepage and deterioration in the following areas: seals (of wheel and swingarm bearings, fork and brakes), electric components (couplers, connectors, instruments, switches and lights), breather hoses and vents.**
- **For motorcycles equipped with a windshield: Do not use strong cleaners or hard sponges as they will cause dulling or scratching. Some cleaning compounds for plastic may leave scratches on the windshield. Test the product on a small hidden part of the windshield to make sure that it does not leave any marks. If the windshield is scratched, use a quality plastic polishing compound after washing.**

After normal use

Remove dirt with warm water, a mild detergent, and a soft, clean sponge, and then rinse thoroughly with clean water. Use a toothbrush or bottlebrush for hard-to-reach areas. Stubborn dirt and insects will come off more easily if the area is covered with a wet cloth for a few minutes before cleaning.

After riding in the rain, near the sea or on salt-sprayed roads

Since sea salt or salt sprayed on roads during winter are extremely corrosive in combination with water, carry out the following steps after each ride in the rain, near the sea or on salt-sprayed roads.

NOTE:

Salt sprayed on roads in the winter may remain well into spring.

1. Clean the motorcycle with cold water and a mild detergent, after the engine has cooled down.

ECA00012

CAUTION:

Do not use warm water since it increases the corrosive action of the salt.

2. After drying the motorcycle, apply a corrosion protection spray on all metal, including chrome- and nickel-plated, surfaces to prevent corrosion.

7

After cleaning

1. Dry the motorcycle with a chamois or an absorbing cloth.
2. Use a chrome polish to shine chrome, aluminum and stainless-steel parts, including the exhaust system. (Even the thermally induced discoloring of stainless-steel exhaust systems can be removed through polishing.)
3. To prevent corrosion, it is recommended to apply a corrosion protection spray on all metal, including chrome- and nickel-plated, surfaces.
4. Use spray oil as a universal cleaner to remove any remaining dirt.
5. Touch up minor paint damage caused by stones, etc.
6. Wax all painted surfaces.
7. Let the motorcycle dry completely before storing or covering it.

EWA00031

⚠ WARNING

- **Make sure that there is no oil or wax on the brakes or tires.**
- **If necessary, clean the brake discs and brake linings with a regular brake disc cleaner or acetone, and wash the tires with warm water and a mild detergent. Before riding at higher speeds, test the motorcycle's braking performance and cornering behavior.**

ECA00013

CAUTION:

- **Apply spray oil and wax sparingly and make sure to wipe off any excess.**
- **Never apply oil or wax to any rubber and plastic parts, but treat them with a suitable care product.**
- **Avoid using abrasive polishing compounds as they will wear away the paint.**

NOTE:

Consult a Yamaha dealer for advice on what products to use.

Storage

Short-term

Always store your motorcycle in a cool, dry place and, if necessary, protect it against dust with a porous cover.

ECA00014

CAUTION:

- **Storing the motorcycle in a poorly ventilated room or covering it with a tarp, while it is still wet, will allow water and humidity to seep in and cause rust.**
- **To prevent corrosion, avoid damp cellars, stables (because of the presence of ammonia) and areas where strong chemicals are stored.**

Long-term

Before storing your motorcycle for several months:

1. Follow all the instructions in the "Care" section of this chapter.
2. For motorcycles equipped with a fuel cock that has an "OFF" position: Turn the fuel cock lever to "OFF".
3. Drain the carburetor float chambers by loosening the drain bolts; this will prevent fuel deposits from building up. Pour the drained fuel into the fuel tank.
4. Fill up the fuel tank and add fuel stabilizer (if available) to prevent the fuel tank from rusting and the fuel from deteriorating.
5. Perform the following steps to protect the cylinders, piston rings, etc. from corrosion.
   a. Remove the spark plug caps and spark plugs.
   b. Pour a teaspoonful of engine oil into each spark plug bore.
   c. Install the spark plug caps onto the spark plugs, and then place the spark plugs on the cylinder head so that the electrodes are grounded. (This will limit sparking during the next step.)
   d. Turn the engine over several times with the starter. (This will coat the cylinder walls with oil.)
   e. Remove the spark plug caps from the spark plugs, and then install the spark plugs and the spark plug caps.

EWA00003

⚠ WARNING

To prevent damage or injury from sparking, make sure to ground the spark plug electrodes while turning the engine over.

6. Lubricate all control cables and the pivoting points of all levers and pedals as well as of the sidestand/ centerstand.
7. Check and, if necessary, correct the tire air pressure, and then lift the motorcycle so that both of its wheels are off the ground. Alternatively, turn the wheels a little every month in order to prevent the tires from becoming degraded in one spot.
8. Cover the muffler outlets with plastic bags to prevent moisture from entering them.
9. Remove the battery and fully charge it. Store it in a cool, dry place and charge it once a month. Do not store the battery in an excessively cold or warm place [less than 0 °C (30 °F) or more than 30 °C (90 °F)]. For more information on storing the battery, see page 6-32.

NOTE:
Make any necessary repairs before storing the motorcycle.

Specifications 8-1

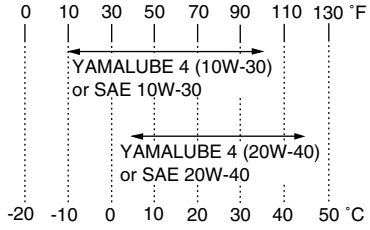
SPECIFICATIONS

EAU01038

Specifications

Model	**XVS650(C)/XVS650A(C)**
Dimensions	
XVS650(C)	
Overall length	2,340 mm (92.1 in)
Overall width	880 mm (34.6 in)
Overall height	1,070 mm (42.1 in)
Seat height	695 mm (27.4 in)
Wheelbase	1,610 mm (63.4 in)
Ground clearance	140 mm (5.5 in)
Minimum turning radius	3,100 mm (122.0 in)
XVS650A(C)	
Overall length	2,450 mm (96.5 in)
Overall width	930 mm (36.6 in)
Overall height	1,105 mm (43.5 in)
Seat height	710 mm (28.0 in)
Wheelbase	1,625 mm (64.0 in)
Ground clearance	140 mm (5.5 in)
Minimum turning radius	3,400 mm (133.9 in)
Basic weight (with oil and full fuel tank)	
XVS650(C)	233 kg (514 lb)
XVS650A(C)	247 kg (545 lb)

Engine	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	V type 2-cylinder
Displacement	649 cm^3
Bore × stroke	81 × 63 mm (3.19 × 2.48 in)
Compression ratio	9:1
Starting system	Electric starter
Lubrication system	Wet sump
Engine oil	
Type	



Recommended engine oil classification	API Service SE, SF, SG or higher

8

CAUTION:

In order to prevent clutch slippage (since the engine oil also lubricates the clutch), do not mix any chemical additives. Do not use oils with a diesel specification of "CD" or oils of a higher quality than specified. In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.

Quantity	
Without oil filter element replacement	2.6 L (2.3 Imp qt, 2.8 US qt)
With oil filter element replacement	2.8 L (2.5 Imp qt, 3.0 US qt)
Total amount (dry engine)	3.2 L (2.8 Imp qt, 3.4 US qt)
Final gear oil	
Type	Hypoid gear oil SAE 80 (API GL4) or multi-grade hypoid gear oil SAE 80W-90
Final gear case capacity	0.19 L (0.17 Imp qt, 0.20 US qt)
Air filter	Dry element
Fuel	
Type	UNLEADED GASOLINE ONLY
Fuel tank capacity	16 L (3.5 Imp gal, 4.2 US gal)
Reserve amount	3 L (0.7 Imp gal, 0.8 US gal)
Carburetor	
Manufacturer	MIKUNI
Model × quantity	BDS28 × 2
Spark plug	
Manufacturer/model	NGK / DPR7EA-9 or DENSO / X22EPR-U9
Gap	0.8– 0.9 mm (0.03–0.04 in)
Clutch type	Wet, multiple-disc
Transmission	
Primary reduction system	Spur gear
Primary reduction ratio	1.789
Secondary reduction system	Shaft drive
Secondary reduction ratio	3.070
Transmission type	Constant-mesh 5-speed
Operation	Left foot
Gear ratio 1st	2.714
2nd	1.900
3rd	1.458
4th	1.166
5th	0.966
Chassis	
Frame type	Double cradle
Caster angle	35°
Trail	
XVS650(C)	153 mm (6.02 in)
XVS650A(C)	145 mm (5.7 in)

8

Tires

XVS650(C)

Front	
Type	Tube tire
Size	100/90-19 57S
	100/90-19 M/C 57S
Manufacturer/model	Bridgestone / L309
	Dunlop / F24
Rear	
Type	Tube tire
Size	170/80-15 M/C 77S
Manufacturer/model	Bridgestone / G546
	Dunlop / K555
Maximum load*	180 kg (397 lb)
Tire air pressure (measured on cold tires)	
Up to 90 kg (198 lb)*	
Front	200 kPa (2.00 kgf/cm^2, 29 psi)
Rear	225 kPa (2.25 kgf/cm^2, 33 psi)
90 kg (198 lb)–maximum*	
Front	200 kPa (2.00 kgf/cm^2, 29 psi)
Rear	250 kPa (2.50 kgf/cm^2, 36 psi)

* Total weight of rider, passenger, cargo and accessories

XVS650A(C)

Front	
Type	Tube tire
Size	130/90-16 67S
	130/90-16 M/C 67S
Manufacturer/model	Bridgestone / G703
	Dunlop / D404F
Rear	
Type	Tube tire
Size	170/80-15 M/C 77S
Manufacturer/model	Bridgestone / G702
	Dunlop / D404G
Maximum load*	200 kg (441 lb)
Tire air pressure (measured on cold tires)	
Up to 90 kg (198 lb)*	
Front	225 kPa (2.25 kgf/cm^2, 33 psi)
Rear	225 kPa (2.25 kgf/cm^2, 33 psi)
90 kg (198 lb)–maximum*	
Front	225 kPa (2.25 kgf/cm^2, 33 psi)
Rear	250 kPa (2.50 kgf/cm^2 , 36 psi)

* Total weight of rider, passenger, cargo and accessories

Wheels
XVS650(C)
Front
Type: Spoke wheel
Size: 19 × MT2.50
19 M/C × MT2.50
Rear
Type: Spoke wheel
Size: 15 M/C × MT3.50
XVS650A(C)
Front
Type: Spoke wheel
Size: 16 × MT3.00
16 M/C × MT3.00
Rear
Type: Spoke wheel
Size: 15 M/C × MT3.50

Brakes
Front
Type: Single disc brake
Operation: Right hand
Fluid: DOT 4
Rear
Type: Drum brake
Operation: Right foot

Suspension
Front: Telescopic fork
Rear: Swingarm (monocross)

Spring/shock absorber
Front: Coil spring / oil damper
Rear: Coil spring / gas-oil damper

Wheel travel
XVS650(C)
Front: 140 mm (5.5 in)
Rear: 86 mm (3.4 in)
XVS650A(C)
Front: 140 mm (5.5 in)
Rear: 98 mm (3.9 in)

Electrical systems
Ignition system: T.C.I. (digital)
Charging system
Type: A.C. magneto
Standard output: 14 V 20 A @ 5,000 r/min
Battery
Model: GT12B-4
Voltage, capacity: 12 V, 10 Ah

Headlight type: Quartz bulb (halogen)

Bulb voltage, wattage × quantity

Headlight	12 V, 60/55 W × 1
Tail/brake light	12 V, 8/27 W × 1
Front turn signal/ position light	12 V, 27/8 W × 2
Rear turn signal light	12 V, 27 W × 2
Meter lighting	12 V, 1.7 W × 1
Neutral indicator light	12 V, 1.7 W × 1
High beam indicator light	12 V, 1.7 W × 1
Turn signal indicator light	12 V, 1.7 W × 1
Engine trouble warning light	12 V, 1.7 W × 1

Fuses

Main fuse	30 A
Ignition fuse	10 A
Signaling system fuse	10 A
Headlight fuse	15 A
Carburetor heater fuse	15 A

Identification numbers 9-1
Key identification number 9-1
Vehicle identification number 9-1
Model label 9-2
Reporting safety defects 9-3
Motorcycle noise regulation 9-4
Maintenance record 9-5
STREET AND ENDURO MOTORCYCLE LIMITED WARRANTY 9-7
YAMAHA EXTENDED SERVICE (Y.E.S.) 9-9

EAU01039

EAU02944

Identification numbers

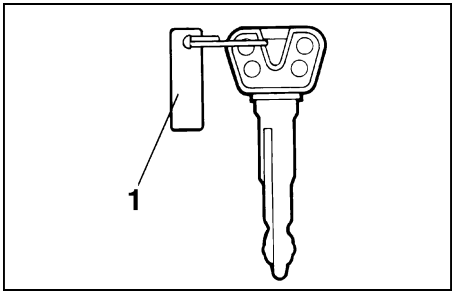
Record the key identification number, vehicle identification number and model label information in the spaces provided below for assistance when ordering spare parts from a Yamaha dealer or for reference in case the vehicle is stolen.

1. KEY IDENTIFICATION NUMBER:

2. VEHICLE IDENTIFICATION NUMBER:

3. MODEL LABEL INFORMATION:

○
●

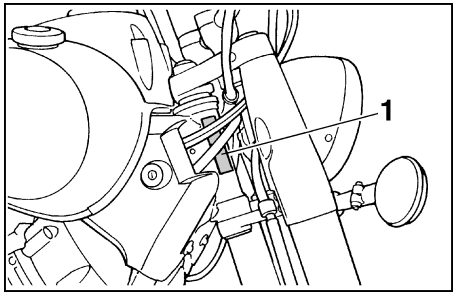


1. Key identification number

EAU01041

Key identification number

The key identification number is stamped into the key tag. Record this number in the space provided and use it for reference when ordering a new key.



1. Vehicle identification number

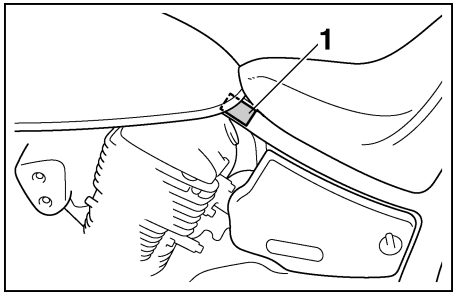
EAU01043

Vehicle identification number

The vehicle identification number is stamped into the steering head pipe. Record this number in the space provided.

NOTE:

The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your area.



1. Model label

EAU01804

Model label

The model label is affixed to the frame under the rider seat. (See page 3-10 [XVS650] or 3-11 [XVS650A] for rider seat removal and installation procedures.) Record the information on this label in the space provided. This information will be needed when ordering spare parts from a Yamaha dealer.

CONSUMER INFORMATION

EAU01051

Reporting safety defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Yamaha Motor Corporation, U.S.A. If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Yamaha Motor Corporation, U.S.A.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

EAU01053

Motorcycle noise regulation

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED:
Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

“AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW”.

These acts include tampering with the following systems; i.e., modification, removal, etc.

Exhaust system	Muffler Exhaust pipe Silencer
Intake system	Air cleaner case Air cleaner element Intake duct

EAU01874

Maintenance record

Copies of work orders and/or receipts for parts purchased and installed on your motorcycle will be required to document that maintenance has been completed in accordance with the emissions warranty. The chart below is printed only as a reminder that maintenance work is required. It is not acceptable proof of maintenance work.

Maintenance interval	Date of service	Mileage	Servicing dealer name and address	Remarks
600 mi (1,000 km) or 1 month				
4,000 mi (7,000 km) or 6 months				
8,000 mi (13,000 km) or 12 months				
12,000 mi (19,000 km) or 18 months				
16,000 mi (25,000 km) or 24 months				
20,000 mi (31,000 km) or 30 months				
24,000 mi (37,000 km) or 36 months				

Maintenance interval	Date of service	Mileage	Servicing dealer name and address	Remarks
28,000 mi (43,000 km) or 42 months				
32,000 mi (49,000 km) or 48 months				
36,000 mi (55,000 km) or 54 months				
40,000 mi (61,000 km) or 60 months				

EAU02918

YAMAHA MOTOR CORPORATION, U.S.A.
STREET AND ENDURO MOTORCYCLE LIMITED WARRANTY

Yamaha Motor Corporation, U.S.A. hereby warrants each new model Yamaha motorcycle will be free from defects in material and workmanship for the period of time stated herein, subject to certain stated limitations.

THE PERIOD OF WARRANTY for Yamaha motorcycles originally equipped with headlight, stoplight, and turn signals shall be one (1) year from the date of purchase, with no mileage limitation.

MODELS EXCLUDED FROM WARRANTY include those used for non-Yamaha-authorized renting, leasing, or other commercial purposes, and TZ models.

DURING THE PERIOD OF WARRANTY any authorized Yamaha motorcycle dealer will, free of charge, repair or replace any part adjudged defective by Yamaha due to faulty workmanship or material from the factory. Parts used in warranty repairs will be warranted for the balance of the product's warranty period. All parts replaced under warranty become property of Yamaha Motor Corp. U.S.A.

GENERAL EXCLUSIONS from this warranty shall include any failures caused by:

a. Competition or racing use.
b. Installation of parts or accessories that are not qualitatively equivalent to genuine Yamaha parts.
c. Abnormal strain, neglect, or abuse.
d. Lack of proper maintenance.
e. Accident or collision damage.
f. Modification to original parts.

SPECIFIC EXCLUSIONS from this warranty shall include parts replaced due to normal wear or routine maintenance.

THE CUSTOMER'S RESPONSIBILITY under this warranty shall be to:

1. Operate and maintain the motorcycle as specified in the appropriate Owner's Manual, and
2. Give notice to an authorized Yamaha motorcycle dealer of any and all apparent defects within ten (10) days after discovery, and make the machine available at that time for inspection and repairs at such dealer's place of business.

WARRANTY TRANSFER: To transfer the warranty from the original purchaser to any subsequent purchaser, it is imperative that the machine be inspected and registered for warranty by an authorized Yamaha motorcycle dealer. In order for this warranty to remain in effect, this inspection and registration must take place within ten (10) days after transfer. An inspection and registration fee will be charged for this service.

EMISSIONS CONTROL SYSTEM WARRANTY
Yamaha Motor Corporation, U.S.A. also warrants to the ultimate purchaser and each subsequent purchaser of each Yamaha motorcycle covered by this warranty with a displacement of 50cc or greater, that the vehicle is designed, built, and equipped so as to conform at the time of sale with all U.S. emissions standards applicable at the time of manufacture and that it is free from defects in materials and workmanship which would cause it not to meet these standards within the periods listed immediately below. Failure other than those resulting from defects in material or workmanship which arise solely as a result of owner abuse and / or lack of proper maintenance are not covered by this warranty.

ENGINE DISPLACEMENT	PERIOD
50cc to 169cc	12,000 km (7,465 miles) or five years, whichever occurs first
170cc to 279cc	18,000 km (11,185 miles) or five years, whichever occurs first
280cc or over	30,000 km (18,641 miles) or five years, whichever occurs first

YAMAHA MOTOR CORPORATION, U.S.A. MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY YAMAHA MOTOR CORPORATION, U.S.A. AND EXCLUDED FROM THIS WARRANTY.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. ALSO EXCLUDED FROM THIS WARRANTY ARE ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LOSS OF USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

YAMAHA MOTOR CORPORATION, U.S.A.
P.O. Box 6555
Cypress, California 90630

9

WARRANTY QUESTIONS AND ANSWERS

Q. What costs are my responsibility during the warranty period?
A. The customer's responsibility includes all costs of normal maintenance services, non-warranty repairs, accident and collision damages, and oil, oil filters, air filters, spark plugs, and brake shoes.

Q. What are some examples of "abnormal" strain, neglect, or abuse?
A. These terms are general and overlap each other in areas. Specific examples include: Running the machine out of oil, sustained high-rpm, full-throttle, operating the machine with a broken or damaged part which causes another part to fail, damage or failure due to improper or careless transportation and or tie down. If you have any specific questions on operation or maintenance, please contact your dealer for advice.

Q. Does the warranty cover incidental costs such as towing or transportation due to a failure?
A. No. The warranty is limited to repair of the machine itself.

Q. May I perform any or all of the recommended maintenance shown in the Owner's Manual instead of having the dealer do them?
A. Yes, if you are a qualified mechanic and follow the procedures specified in the Owner's and Service Manual. We do recommend, however, that items requiring special tools or equipment be done by Yamaha Motorcycle dealer.

Q. Will the warranty be void or cancelled if I do not operate or maintain my new motorcycle exactly as specified in the Owner's Manual?
A. No. The warranty on a new motorcycle cannot be "voided" or "cancelled." **However, if a particular failure is caused by operation or maintenance other than as shown in the Owner's Manual, that failure may not be covered under warranty.**

Q. What responsibility does my dealer have under this warranty?
A. Each Yamaha Motorcycle dealer is expected to:
1. Completely set up every new machine before sale.
2. Explain the operation, maintenance, and warranty requirements to your satisfaction at the time of sale, and upon your request at any later date.
3. Each Yamaha Motorcycle dealer is held responsible for his setup, service and warranty repair work.

Q. Is the warranty transferable to second owners?
A. Yes. The remainder of the existing warranty can be transferred upon request. The unit has to be inspected and re-registered by an authorized Yamaha Motorcycle dealer for the policy to remain effective.

CUSTOMER SERVICE

If your machine requires warranty service, you must take it to any authorized Yamaha Motorcycle dealer within the continental United States. Be sure to bring your warranty registration card or other valid proof of the original date of purchase. If a question or problem arises regarding warranty, first contact the owner of the dealership. Since all warranty matters are handled at the dealer level, this person is in the best position to help you. If you are still not satisfied and require additional assistance, please write:

YAMAHA MOTOR CORPORATION U.S.A.
CUSTOMER RELATIONS DEPARTMENT
P.O. Box 6555
Cypress, California 90630

When contacting Yamaha Motor Corporation, U.S.A. don't forget to include any important information such as names, addresses, model, V.I.N. (frame number), dates, and receipts.

CHANGE OF ADDRESS

The federal government requires each manufacturer of a motor vehicle to maintain a complete, up-to-date list of all first purchasers against the possibility of a safety-related defect and recall. This list is compiled from the purchase registrations sent to Yamaha Motor Corporation, U.S.A. by the selling dealer at the time of your purchase.

If you should move after you have purchased your new motorcycle, please advise us of your new address by sending a postcard listing your motorcycle model name, V.I.N. (frame number), dealer number (or dealer's name) as it is shown on your warranty card, your name and new mailing address. Mail to:

YAMAHA MOTOR CORPORATION, U.S.A.
P.O. Box 6555
Cypress, California 90630
Attention: Warranty Department

This will ensure that Yamaha Motor Corporation, U.S.A. has an up-to-date registration record in accordance with federal law.

EAU01063

YAMAHA EXTENDED SERVICE (Y.E.S.)

Keep your Yamaha protected even after your warranty expires with genuine Yamaha Extended Service (Y.E.S.).

- Y.E.S. is designed and administered by Yamaha Motor Corporation to provide maximum owner satisfaction. You get uninterrupted factory-backed coverage for extra peace of mind.
- Y.E.S. is flexible. You choose the plan that's right for you: 12 months, 24 months, or 36 months beyond your warranty period.
- Y.E.S. is designed and administered by the same Yamaha people who handle your warranty – and it shows in the comprehensive coverage benefits. There are no mileage limitations. Coverage isn't limited to "moving parts" or the "drive train" like many other plans. And Y.E.S. covers manufacturing defects just like the warranty. See the sample contract at your Yamaha dealer to see how comforting uninterrupted factory-backed protection can be.
- You don't have to pay anything for covered repairs. There's no deductible to pay, and repairs aren't "pro-rated." You don't have any "out-of-pocket" expenses for covered repairs.
- In addition, Travel and Recreation Interruption Protection (TRIP) is included at no extra cost. TRIP gives you up to $150 reimbursement per occurrence for any reasonable expenses you incur because your Yamaha needs covered service: replacement vehicle rental, emergency towing, phone calls, even food and lodging when you are away from home. This superb coverage goes into effect when you purchase Y.E.S., so it applies to any warranty repairs as well as covered repairs during your entire Y.E.S. plan period.
- Y.E.S. coverage is honored at any authorized Yamaha dealer nationwide.
- Y.E.S. coverage is transferable to a new owner if you sell or trade-in. That can make your Yamaha much more valuable!

This excellent Y.E.S. plan coverage is only available to Yamaha owners like you, and only while your Yamaha is still within the Yamaha Limited Warranty period. So visit your authorized Yamaha dealer to get all the facts. He can show you how easy it is to protect your investment with Yamaha Extended Service.

We urge you to act now. You'll get the excellent benefits of TRIP coverage right away, and you'll rest easy knowing you'll have strong factory-backed protection even after your Yamaha Limited Warranty expires. You can also save money: Y.E.S. costs less within the first 90 days after you buy your Yamaha. See your dealer today!

A special note:
If visiting your dealer isn't convenient, contact Yamaha with your Primary ID number (your frame number). We'll be happy to help you get the Y.E.S. coverage you need.

Yamaha Service Marketing
P.O. Box 6555
Cypress, CA 90630

Y E S

YAMAHA EXTENDED SERVICE

INDEX

A

Accessories and replacement parts 6-20
Air filter element, cleaning.....6-15

B

Battery 6-31
Brake and clutch levers, checking and lubricating 6-28
Brake and shift pedals, checking and lubricating 6-28
Brake fluid, changing 6-27
Brake fluid level, checking.....6-26
Brake lever.....3-5
Brake lever free play, adjusting 6-22
Brake light switch (rear), adjusting 6-24
Brake pads and shoes, checking 6-25
Brake pedal.....3-5
Brake pedal position and free play, adjusting 6-23

C

Cables, checking and lubricating.....6-27
Canister (for California only).....6-11
Carburetors, adjusting.....6-16
Care.....7-1
Clutch lever.....3-4
Clutch lever free play, adjusting 6-21

D

Dimmer switch 3-3

E

Engine break-in 5-5
Engine oil and oil filter element 6-11
Engine stop switch..... 3-3
Engine trouble warning light 3-2

F

Final gear oil..... 6-14
Front fork, checking 6-29
Fuel 3-7
Fuel cock..... 3-8
Fuel tank cap..... 3-6
Fuses, replacing 6-33

H

Handlebar switches 3-3
Headlight bulb, replacing 6-34
Helmet holder..... 3-12
High beam indicator light 3-2
Horn switch 3-3

I

Identification numbers 9-1
Ignition circuit cut-off system..... 3-16
Indicator and warning lights 3-2

K

Key identification number 9-1

L

Labels, location 1-7
Luggage strap holders..... 3-15

M

Main switch/steering lock 3-1
Maintenance and lubrication, periodic 6-4
Maintenance, emission control system.....6-3
Maintenance, periodic 6-1
Maintenance record 9-5
Model label 9-2

N

Neutral indicator light 3-2
Noise regulation 9-4

P

Panels, removing and installing.....6-7
Parking.....5-6
Part locations 2-1
Pre-operation check list.....4-1

S

Safety defects, reporting 9-3
Safety information 1-1
Seats (XVS650) 3-9
  Passenger seat.....3-9
  Rider seat 3-10
Seats (XVS650A).....3-11
  Passenger seat.....3-11
  Rider seat 3-11
Shifting.....5-3
  Decelerating 5-5
  Shift points.....5-5
  Starting out and accelerating 5-4

Shift pedal (XVS650) 3-4
Shift pedal (XVS650A) 3-4
Shock absorber assembly, adjusting 3-14
Sidestand 3-15
Sidestand, checking and lubricating 6-29
Spark plugs, checking 6-9
Specifications 8-1
Speedometer unit 3-2
Starter (choke) knob 3-9
Starting and warming up a cold engine 5-1
Starting a warm engine 5-3
Start switch 3-3
Steering, checking 6-30
Storage 7-4
Storage compartment 3-13
Supporting the motorcycle 6-36

T

Throttle cable free play, adjusting 6-17
Throttle grip and cable, checking and lubricating 6-27
Tires 6-17
Tool kit 6-1
Troubleshooting 6-40
Troubleshooting chart 6-41
Turn signal indicator light 3-2
Turn signal light or tail/brake light bulb, replacing 6-35
Turn signal switch 3-3

V

Valve clearance, adjusting 6-17
Vehicle identification number 9-1

W

Warranty, extended 9-9
Warranty limited 9-7
Wheel bearings, checking 6-31
Wheel (front) 6-37
  Installing 6-37
  Removing 6-37
Wheel (rear) 6-38
  Installing 6-39
  Removing 6-38
Wheels 6-19

PROTECT YOUR INVESTMENT

Use Genuine YAMAHA Parts And Accessories

See your Authorized YAMAHA Dealer for a Genuine YAMAHA Service Manual.

YAMAHA

YAMAHA MOTOR CO., LTD.

PRINTED ON RECYCLED PAPER

PRINTED IN JAPAN
2002.03-4.0×1 CR
(E)